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CHRIST
(DEEMED TO BE UNIVERSITY)
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TIMELESS TOONS

REVELATIONS 2025

ANNUAL POSTGRADUATE INTRA DEPARTMENT FEST


TIMELESS
TOONS

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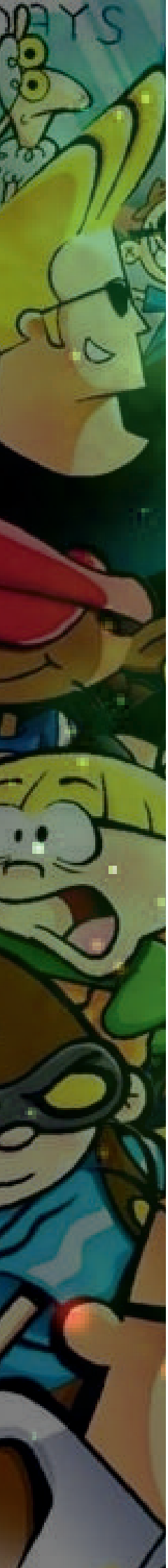


From the Vice Chancellor's Desk

At CHRIST (Deemed to be University), student success is guaranteed through a holistic approach that comprises the learning of compulsory skills, usage of state-of-the-art technology, and formation of a think-ahead mentality.

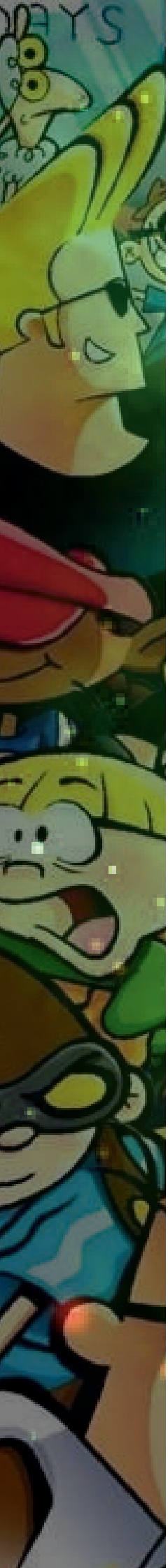
This multi-pronged approach is forged through an intermingling of centuries-old pedagogy, pedagogical practices, hands-on training programs, and studying in actual situations.

Thus, the students emerge with not only the requisite knowledge but also the flexibility and nimbleness to prosper in challenging conditions and drive innovation to resolve novel challenges in the midst of disruptions.

Furthermore, the postgraduate students with the Computer Science Department have portrayed an excellent enthusiasm in harnessing the infobahn platform to prove their competence and expertise in their respective domains. Through infobahn, these individuals contribute to the general public by sharing their specialized knowledge and successfully demonstrating real-world application of theoretical concepts.

I am delighted, as the Vice-Chancellor of Christ University, to recognize and appreciate our postgraduate students for their outstanding performance. Their triumph at Kristu Jayanti College and winning numerous awards along with an overall winner award and earning first place at St. Joseph's University, winning the National Level Datathon hosted at SRM Institute of Science and Technology, speaks volumes about their tremendous commitment and abilities. All these achievements not only reflect their hard work but also indicate the excellence and determination values instilled in the students by Christ University. On this occasion of celebrating the 31st volume of Infobahn, I take this opportunity to commend this worthy endeavor. Your efforts and contributions to the academic and professional community are truly commendable, and I am delighted to see your future success.

Dr. Fr. Joseph CC



From the Head of the Department's Desk

At CHRIST (Deemed to be University), our commitment to student success is reflected through a balanced strategy that emphasizes the acquisition of essential skills, effective utilization of modern technology, and cultivating an innovative mentality

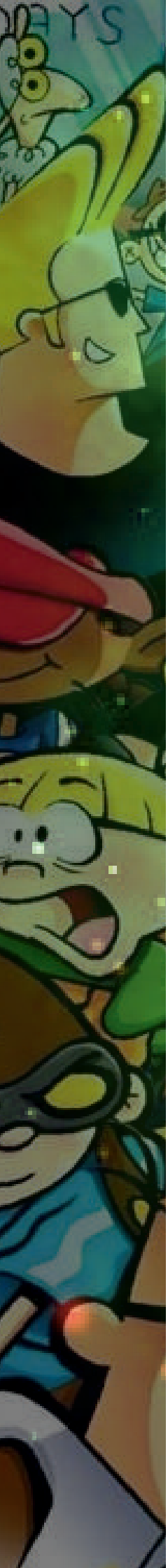
This wide-ranging approach is supported by a combination of traditional methods, practical training opportunities, and real-world exposure. As a result, students graduate equipped not just with the information that they hold but also with the flexibility and the ability to thrive under evolving circumstances and come up with new solutions.

As the head of the Department of Computer Science at Christ University, I am delighted to recognize the outstanding performance of our postgraduate scholars. Our students recently did outstandingly well at Shells 2025, acquiring the overall winner award. We won the Datathon and best innovation award at the National Level Datathon at SRM Institute of Science and Technology. We also won first place in Code Hunt at Incognito 2025, hosted by St. Joseph's University.

I am honored to present recent achievements of the faculty, including Dr. Chandra J.'s appointment as an official oneAPI Innovator, recognizing her contributions towards fostering technology in our society. Dr. Jobin Francis was awarded a one-year postdoctoral fellowship at Fraunhofer IGD, Germany, for groundbreaking research in "Applications of Hyperspectral Imaging of Smart Farming." Dr. Rajesh Kanna was conferred with the Research Leadership Award by Christ University, while Dr. Cecil Donald A. has been certified as an instructor in automation skills by UiPath Academic Alliance.

As we celebrate the Infobahn, I extend my appreciation to all the faculty and students who have been responsible for the development and success of this event. Your commitment and efforts still shape the academic and professional scene, and I eagerly await to see even more milestones down the road.

Dr Ashok Immanuel V



From the Editorial Team's Desk

'Revelations' is back, and along with it, 'Infobahn', the bi-annual magazine of the Department of Computer Science at CHRIST (Deemed to be University), returns as well! The magazine provides the post-graduate students of the department yet another platform to showcase their talents and knowledge in various fields.

We are thrilled to unveil this year's captivating theme for our magazine: the Timeless Toons. As it one of the most iconic representations of our beloved franchises in retro animations, the Timeless Toons ensemble presents a rich and intricate tapestry of superheroes, villains, and interconnected storylines that have captivated the hearts and imaginations of millions worldwide. The cartoon landscape brought to life by several animation Studios has redefined the superhero genre, elevating it to new heights of storytelling, visual spectacle, and emotional resonance. Through this theme, we endeavor to immerse our readers in the extraordinary world of "Timeless Toons", inviting them to explore the diverse array of characters, the epic narratives, and the profound impact this cinematic phenomenon has made on nostalgic culture and the collective imagination. Prepare to embark on a thrilling odyssey filled with heroism, adventure, and the boundless possibilities that come with the exploration of extraordinary powers, as we invite you to join us in a celebration of the essence and enduring impact of the world of Timeless Toons in the forthcoming submissions of our magazine.

With that in mind, this issue of Infobahn has been prepared with a variety of content. The team has worked with great zeal and support from faculty and students. We hope you find this magazine an exhilarating journey through the Toon-Tastic journey.

THE OMNITRIX CHRONICLES

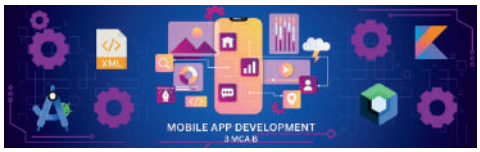
Article Section

MAD MAX 2025:
WHEN MEMES MET MOBILE APPS

DR. GOBI RAMASWAMY

In the vibrant world of Mobile Applications Development, my MCA students brought an unexpected twist—memes! What started as a casual classroom joke soon turned into an incredible creative experiment. Emojis became code, memes inspired UI designs, and debugging sessions were filled with viral reaction GIFs.

The real game-changer? Our WhatsApp group—"MAD Max"—a name my students proudly coined. But here's the twist: almost every conversation in the group happened in emojis! Need an assignment update? A thumbs-up 👍. Confused about a concept? A facepalm 🤦‍♂️. Encountered yet another Gradle build error? A screaming emoji 😱. Celebrating a bug finally getting fixed? Fireworks 🎆. It was a digital language of its own, making communication both hilarious and surprisingly efficient.



Of course, no Android Studio experience is ever smooth. One moment, everything compiles perfectly, and the next—Gradle decides to throw a tantrum. "Why is it downloading a million dependencies again?" students would groan, only to be met with a flood of crying-laughing 😂 and exploding-head 🤯 emojis in the group. But through these ups and downs, one idea sparked a revolution: What if we designed an app that responds only in memes?

That very concept transformed our class into a hotbed of innovation, where meme-driven chatbots, filter-based replies, and interface-enabled emojis were being created. "MAD Max" was not just a WhatsApp group anymore—it was a revolution!. From combating Gradle's mood swings to pushing UI/UX to the extremes, my students proved that technology is not only about logic and algorithms but also fun, relatability, and creativity. Here's how memes and mobile apps converged to create a class experience unlike any other.

"INNOCENT OR INSIDIOUS? THE HIDDEN DARKNESS IN YOUR FAVORITE CARTOONS"

ASHVITA KOLI
3 MCA B

Cartoons were the core of childhood for most of us. Cartoons painted our imagination, offered endless colors of amusement and formed an integral part of our nostalgia. Tom and Jerry, Courage the Cowardly Dog, Shinchan, and Scooby-Doo all appeared harmless in the beginning, but under the superficial colors of the cartoons and gentle humor lay some haunting secrets, secret meanings, and controversy, which fell like a dark shadow on their image.

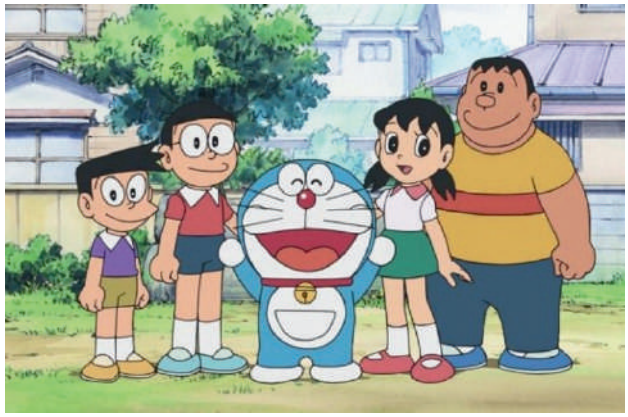
But what if some of these cartoons actually had deeper, darker meanings? Throughout the years, Reddit users and conspiracy theorists alike have emerged with dark interpretations and real-life spooky experiences connected to the cartoons we used to watch.

Behind the Screen: The Cartoons They Didn't Want You to See

Shinchan: More Than Just a Prankster?

Fans saw that entire sequences and phrases were changed in Shinchan, which was restricted for its rebellious comedy. This led to speculations that the show's message was being reshaped rather than simply the mischief being toned down. The narrative of shinchan may have tragic roots, according to a far darker version. An online myth claims that the character is based on a true story of a little boy named Shinnosuke who died in Japan while attempting to save his sister from an accident. According to the hypothesis, his heartbroken mother created a fictitious version of the show. Fans are still haunted by this unconfirmed story.

Doraemon: A Dream or a Delusion?



Doraemon was accused of encouraging passiveness by depicting Nobita as unduly reliant on the latest innovations. According to a terrifying Reddit hypothesis, Nobita may possibly be in a coma and Doraemon's world is a creation of his mind.

Reddit's Darkest Cartoon Theories: Childhood Ruined

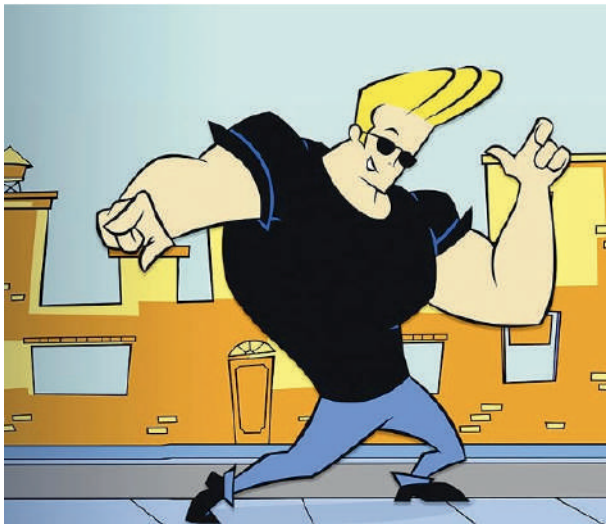
For years, Reddit has been a breeding ground for spine-chilling theories about classic cartoons. Many fans claim that the shows they once adored were actually hiding disturbing secrets in plain sight.

Ed, Edd n Eddy: A Never-Ending Afterlife

One of the most unsettling theories suggests that the entire cul-de-sac is a form of purgatory, and all the kids are actually dead, stuck in an endless afterlife. Their distinct time-period clothing styles and the absence of adults fuel speculation that they came from different eras and never truly moved on.

Do the Powerpuff Girls Exist?

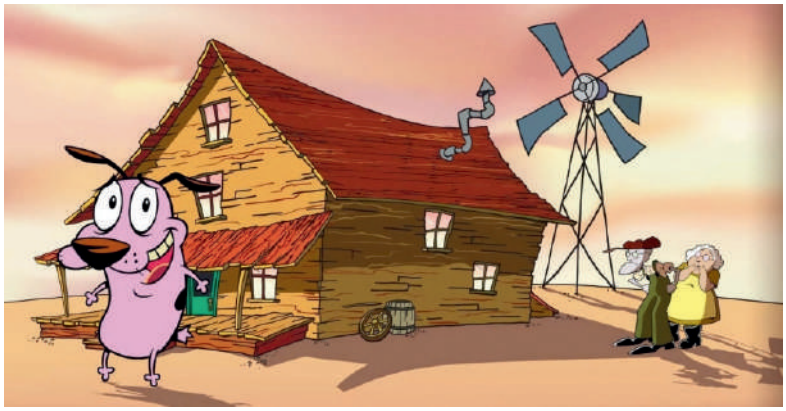
What if there was no such thing as The Powerpuff Girls? According to a troubling idea, Professor Utonium created Blossom, Bubbles, and Buttercup as a coping strategy after losing his daughters. Their antagonists? His inner demons were showing. The girls' talents defy reason and they never age, which further heightens the unsettling conjecture.



Johnny Bravo's Downward Spiral

Johnny Bravo is frequently written off as comic relief since he is a self-centered womanizer. But according to a little-known notion, he has stunted growth as a result of being abandoned as a youngster. He is stuck in a never-ending state of teenage illusion since his mother is the only lady in his life and she is quite controlling.

Courage the Cowardly Dog: A Town That Shouldn't Exist



Fearsome enemies, many of whom resembled characters from urban legends, and eerie visuals were the hallmarks of Courage the Cowardly Dog. Despite being promoted as a children's animation, its psychological horror components have caused viewers to wonder what it really is.

According to a terrifying notion, Courage and his owners, Eustace and Muriel, are truly dead and stuck in a state of limbo where the strange animals they come across are representations of their unsolved concerns. According to a different view, Courage is just a mistreated dog whose heightened sense of danger is a reflection of his fear and suffering. The spooky location of the show—"Nowhere"—could represent loneliness and the devastation of abandoned animals.

Cartoons You Loved... or Theories That Ruined Them?

What if the cartoons we watched as children weren't as innocent as they appeared to be? Fans have discovered dark secrets and terrifying hypotheses about some of the most cherished animated series throughout the years.

Jerry and Tom: An Unending Torture?

Many people wrote off Tom and Jerry for having good humor, but according to one idea, Tom was always attempting to protect Jerry rather than capture him. Tom's owners may replace him with a more aggressive cat if he were to succeed, making their rivalry a survival tactic. When several episodes were prohibited due to racial stereotypes and excessive violence, the show's darker overtones were further brought to light.

Scooby-Doo: A Post-Economic Collapse?

Ever wonder why Scooby and the gang only deal with criminals dressed as ghosts and monsters? Some believe Scooby-Doo takes place in a world where an economic crash left former professionals—scientists, professors, and business owners—resorting to crime. Another theory suggests that Scooby doesn't actually talk—Shaggy, possibly under the influence of hallucinogens, only imagines their conversations.

Phineas and Ferb: A Hallucination of Grief?

An unsettling hypothesis holds that Phineas never lived because his stepfather killed him, and Candace, who can't handle it, makes up stories about his exploits and inventions. According to this hypothesis, Perry represents an invisible force that keeps her stuck in her illusion, while Dr. Doofenshmirtz represents her fractured view of reality.

Ultimately what do you think? Was there always more going on beneath the surface, or were these merely fan theories that were overblown? Despite their appearing impossibility, these theories point to an unnerving possibility: that the cartoons we loved had deeper meanings. Were we being shown something deeper, something we would never really comprehend, or were they just fun adventures?

DECEPTION DECODED: BEYOND THE POLYGRAPH

CHRISMA SERRAO
MSC AI ML

"You can't handle the truth"—A" Few Good Men. This dialogue marks the act of denial while the audience already knows that Jack Nicholson's character in the movie is lying or concealing the truth by making it seem like a complex act of justice. Now this was simple because the movies have popularized some of these dialogues, but how are people actually proven guilty of their deceptions? Is it through their expression? gestures? or their words? I would say all of these.

The search for reliable means to detect deception has a seemingly long history. But one popular method that has been passed down through the years has been the "lie detector test" using a polygraph machine. Can machines truly know if we are lying or not? Well, I will let you determine the answer for this after reading this article.

The polygraph detects lies by measuring certain physiological responses of the person in question, such as the respiration rate, heart rate, blood pressure, and galvanic skin response (sweating) using sensors. Along with these, 'the lie detector expert' uses the concept of "control questions" and "relevant questions," where control questions are designed to elicit a known response and relevant questions are questions on the issue being investigated. The process of a typical polygraph examination involves gathering background information on the subject, including their medical history and the medications they consume. The examiners also understand what the subject's understanding of the test is like. Then their responses to the control questions are recorded while the examiner also builds a rapport with the subject to reduce anxiety. Before the examiner moves to the relevant question, they do a 'simulation test' where the examiner has the subject deliberately lie on a question and records the subject's response.

Then the examiner informs the subject that he will be questioned on matters related to the investigation, the type of questions that are bound to make a lot of subjects uncomfortable. The examiners do use different tactics to ensure that the subject can't differentiate between the control questions and the relevant questions. The results are measured as their physiological responses using the polygraph machine, but there is no scientific validity that proves the correlation between deception and the physiological changes, as physiological changes can be triggered through events and emotions like anger, anxiety, stress, and fear. The polygraph measures physiological arousal, not lies. Many instances where the subjects have manipulated their results through controlling their breathing or muscle tension have been noticed.

These factors question the reliability of the use of this test because of which most courts in U.S. do not administer the results as evidence, in India Article 20(3) of the Indian Constitution protects the individuals from self-incrimination which has been a major factor to limit the admissibility of this test, though a true consent from the subject in the presence of a judicial magistrate is considered to avoid the violation of rights in India.

The limitation of this test has spurred the development of many other tests, like the Voice Stress Analysis. This test records the modulations in the voice. Brain imaging (fMRI and EEG), which measures brain activity associated with lying; eye tracking, which involves measuring pupil dilation, eye movements, and gaze patterns; and other behavioral methods that measure facial expressions, body expressions, and speech patterns. These techniques are seen as less invasive than the polygraph test, but the reliability is still in question. AI in the past few years has been playing a key role in automating many of these processes and using a multimodal approach to detect deception.

After reading this, what is your answer to the question that I asked earlier? Is it a yes or a no? I would say it's a probability between 0 and 1, where the researchers are constantly pushing it to get closer to 1 by reducing the false positive rate.

ROAD SURFACE DETECTION USING YOLOV8: A DEEP LEARNING APPROACH

VIVEK GEORGE STEPHEN
3 MSC AI ML

Road surface detection is a critical aspect of intelligent transportation systems (ITS) and infrastructure management. Detecting road surface anomalies, such as cracks, potholes, and other defects, allows for timely maintenance, reducing accidents, and prolonging road longevity. Advancements in artificial intelligence (AI) and deep learning techniques have led to significant improvements in automated road condition monitoring. One of the most effective deep-learning-based object detection frameworks is You Only Look Once (YOLO), which is known for its speed and accuracy. The latest iteration, YOLOv8, offers improved performance compared to its predecessors, making it an excellent choice for real-time road-surface analysis.

This study explores how YOLOv8 is revolutionizing road surface monitoring by enhancing detection accuracy, optimizing computational efficiency, and integrating it with various data acquisition techniques. The article covers advancements in YOLO architectures, implementation strategies, performance evaluations, and future research directions.

Advancements in YOLO-Based Road Surface Detection

YOLO-based object detection models have evolved significantly since their initial versions, continuously improving the detection accuracy, inference speed, and feature extraction capabilities. Earlier iterations, such as YOLOv3 and YOLOv4, provided reliable road damage detection, but had limitations in precision and real-time processing efficiency. YOLOv5 introduced improved backbone networks and better model optimization, allowing for more efficient pavement damage detection using urban street-view imagery. However, YOLOv8 advances even further, with several key enhancements.

1. Anchor-Free Detection Mechanism: Unlike previous YOLO versions that rely on anchor boxes, YOLOv8 employs an anchor-free approach. This eliminates the need to manually set predefined bounding boxes, enabling the model to generalize better across diverse road conditions and anomalies.
2. Transformer-Based Backbone: YOLOv8 integrates transformer-based layers, significantly enhancing the spatial feature extraction. This enables the model to better understand the contextual information in road surface images and improve the detection of subtle road defects.
3. Improved Loss Function: The model utilizes an advanced loss function that improves the convergence speed and reduces false positive detections, ensuring a more reliable road anomaly detection system.
4. Optimized Computational Efficiency: YOLOv8 is more lightweight than previous versions, making it suitable for deployment on edge devices, such as NVIDIA Jetson, Raspberry Pi, and cloud-based monitoring platforms.

Implementation of YOLOv8 for Road Condition Monitoring

The successful implementation of YOLOv8 for road-condition monitoring involves several key steps:

1. Data Collection and Preprocessing

Data collection is a crucial step in training an effective YOLOv8 model for road-anomaly detection. High-resolution images of the road surfaces were obtained from multiple sources, including

- Unmanned Aerial Vehicles (UAVs): UAVs capture large-scale aerial images, providing a comprehensive view of road conditions.
- Mobile Mapping Systems: Vehicles equipped with high-resolution cameras and sensors collect detailed pavement condition data.
-Smartphone applications enable users to contribute to real-time road damage reports by capturing images and sending GPS-tagged data.
-Satellite and LiDAR Data: Remote sensing techniques, such as LiDAR, provide 3D representations of road surfaces, which can be fused with YOLOv8 models to improve detection accuracy.

2. Model Training and Fine-Tuning

Once the dataset was collected, YOLOv8 was trained using supervised learning. The training process involved the following steps.

Labelling Road Defects: Experts annotate images with bounding boxes for potholes, cracks, and other anomalies.

- Augmentation Techniques: Data augmentation, such as rotation, scaling, and noise addition, enhances the model's robustness to variations in lighting, weather, and camera angles.
- Hyperparameter Optimization: Fine-tuning parameters such as the learning rate, batch size, and network depth ensure optimal model performance.
- Transfer Learning: Pre-trained YOLOv8 models can be fine-tuned on road surface datasets, reducing training time and improving accuracy.

3. Inference and Real-Time Deployment

The trained model was deployed for real-time monitoring, as follows:

- Edge Computing Devices: YOLOv8 runs on embedded systems such as NVIDIA Jetson Nano, processing road images in real-time with minimal latency.
- Cloud-Based Monitoring Systems: Data are uploaded to cloud servers, where YOLOv8 models analyze road conditions and generate maintenance reports.
- Autonomous Vehicles: Self-driving cars equipped with YOLOv8 detect road anomalies and adjust driving behavior accordingly.

Performance Evaluation and Benchmarking

To validate YOLOv8's effectiveness in road surface detection, performance metrics such as mean average precision (mAP), intersection over union (IoU), and inference speed were analyzed. Comparisons with YOLOv5 revealed that YOLOv8 provides

- Higher Accuracy: YOLOv8 consistently achieves a higher mAP, particularly in detecting small cracks and complex road textures.

Faster Inference Speed: The optimized architecture allows YOLOv8 to process images faster than YOLOv5, making it ideal for real-time applications.

- Lower False Positive Rate: Improved feature extraction reduces the chances of misclassifying road patterns as defects.

Challenges and Future Directions

Although YOLOv8 demonstrates remarkable advancements in road surface detection, some challenges remain.

1. Handling Occlusions and Shadows: Road anomalies may be obscured by vehicles, pedestrians, or varying lighting conditions, making detection difficult. Advanced preprocessing techniques, such as histogram equalization, adaptive thresholding, and deep learning-based shadow removal, can help mitigate these issues.
2. Multimodal Sensor Fusion: While YOLOv8 performs well with visual data, integrating complementary data sources such as LiDAR, thermal imaging, and Ground Penetrating Radar (GPR) remains a challenge. Combining these modalities effectively requires robust sensor fusion techniques.
3. Scalability and Deployment: Large-scale implementation of YOLOv8 for nationwide road monitoring requires efficient data transmission, real-time processing, and seamless integration with municipal traffic systems. Edge AI solutions and federated learning techniques could help distribute computational loads.
4. Environmental Variability: Extreme weather conditions, such as heavy rain, snow, or fog, can impact the visibility and accuracy of YOLOv8 models. Developing robust models capable of adapting to diverse environmental settings remains an ongoing challenge.
5. Real-Time Adaptability in Autonomous Vehicles: Ensuring that road condition detection systems work seamlessly in autonomous vehicles with minimal latency is crucial. YOLOv8 must be optimized for faster inference and decision-making while maintaining high accuracy.
6. Data Quality and Annotation: High-quality annotated datasets are essential for training YOLOv8 models, but manual labelling is time-consuming and expensive. Developing automated annotation techniques using weak supervision or self-supervised learning can address this issue.

Despite these challenges, several promising research directions can further enhance YOLOv8's application in road surface monitoring:

1. Advanced AI Techniques: The incorporation of self-supervised learning and generative adversarial networks (GANs) could help in addressing data limitations and improving the generalization capabilities of YOLOv8.
2. Integration with IoT and 5G: The combination of YOLOv8 with IoT-enabled sensors and 5G networks can facilitate real-time road monitoring with minimal latency.
3. Development of Hybrid Models: Exploring hybrid architectures that combine CNNs, transformers, and recurrent neural networks (RNNs) can improve the detection accuracy of complex road defects.
4. Standardized Datasets: Establishing large-scale, publicly available datasets with diverse road conditions will improve benchmarking and model comparisons.
5. Automated Road Maintenance: Linking YOLOv8-based detection with automated repair technologies such as robotic patching systems can create a seamless pipeline for road infrastructure management.

Conclusion

YOLOv8 represents a significant leap forward in road condition monitoring by combining accuracy, efficiency, and scalability. Its anchor-free detection, transformer-based architecture, and real-time deployment capabilities make it an invaluable tool for automated road-maintenance systems. Future research should explore multimodal data fusion, autonomous vehicle integration, and real-time edge-computing solutions to further enhance road safety and infrastructure management.

By harnessing the power of deep learning, YOLOv8 has set a new standard for intelligent transportation systems, paving the way for safer and smarter roads worldwide

CONSCIOUSNESS, THE PENROSE WAY

SOUJANYA BHAT
3 MSC AI ML

What is consciousness? For the sake of discussion, let us imagine a complex mathematical equation on a board. If I asked you how a computer would solve it, each one of you would probably say the computer analyzes the equation, follows a set of steps that is programmed into it, and gives an answer finally. We humans don't just compute. We also understand. Consciousness is the thing that makes us. The thing that allows us to reflect, wonder, and feel.
One scientist who challenged the traditional and conventional understanding of consciousness was Sir Roger Penrose, a mathematical physicist who contributed to the mathematical physics of general relativity and cosmology and who is also famous for his discovery that "black hole formation is a robust prediction of the general theory of relativity."

Penrose believed that human consciousness cannot be explained purely by classical physics or standard brain activity. For decades, the dominant view in neuroscience has been that our brain functions like an advanced computer. This was based on the fact that the brain is made up of neurons that are connected in a vast network communicating using electrical and chemical signals with each other. quite similar to how transistors in a computer process information. Back in 1989, Penrose wrote The Emperor's New Mind, stating that our brains do something that computers can never do. It wasn't because they're complicated but solely because they do not operate in a way that is algorithmic. Computers are powerful but run on algorithms, which are step-by-step processes. Human consciousness, according to Penrose, did beyond that. He believed it made connections that aren't purely logical and understood things that can't be broken down into code.

Why? Gödel's Theorem. Kurt Gödel, a mathematician, in 1931 proved that
"In any formal system (such as mathematics or logic), there will always be some truths that cannot be proven using the rules of the system itself."
Penrose, along with John Lucas, argued that humans can recognize the truth of certain mathematical statements that are according to what Gödel's theorem unprovable within the rules of the system itself. Penrose believed that consciousness is not born out of computation, but he looked toward quantum physics as a medium to understand it. Before diving into what Penrose exactly stated in his theories, we need to know what quantum mechanics is. Quantum mechanics refers to a branch of physics that handles the behavior of particles at the smallest scales. The two concepts that are pivotal in Penrose's theory are superposition, i.e., particles existing in multiple states at the same time. .

A famous example of this includes Schrödinger's cat. Imagining a cat inside a box with the mechanism of it having a 50% chance of releasing poison. Until we open the box and observe the cat, the cat is both alive and dead at the same time. Only when we look does it "choose" a state

Another idea in this realm is a particle existing in multiple states until it is measured, and when an observation happens, the particle collapses to a definite state. Penrose believed in this process and that it played a direct role in consciousness.

The Penrose-Hameroff Theory

Penrose, alongside Stuart Hameroff, an anesthesiologist who had spent years studying the microtubules inside neurons, proposed a theory, the orchestrated objective reduction (Orch-OR), aimed at the quantum activity inside microtubules being responsible for human consciousness. Microtubules are tiny structures that help cells maintain their shape and perform complex functions. Quantum superpositions happen inside the microtubules, and they last for a while before they collapse due to a unique physical process called objective reduction (OR). This collapse is what generates moments of conscious experience. In other words, they argued that our thoughts and awareness just did not arise from simple neuron activity but also from quantum processes happening inside our brain but at a microscopic level.

This sounded exciting, but the scientific community wasn't convinced. The biggest criticism was that quantum states don't last long in warm, wet environments like the brain. Max Tegmark, another physicist, did the math and said that quantum states in the brain would break down way too quickly for them to have any role in thought processes. We also need to ponder over why we need quantum mechanics to explain consciousness. Neuroscientists argued that our minds were the result of complex neurons firing in patterns that emerged from billions of years of evolution. Albeit, Penrose and Hameroff refined their ideas, and in 2014, they pointed to new research suggesting quantum vibrations were happening inside microtubules, leaving evidence that their proposed theory was not far-fetched.

Where are we now? The debate still lives on. Neuroscientists still strongly believe that consciousness emerges from classical neural processes. Most physicists think the brain is warm and noisy for quantum effects to matter.

Maybe Penrose was wrong. Or just maybe he was onto something.

Maybe consciousness is just weirder than what we've ever imagined.

until next time,

COBALAMIN DEFICIENCY: A GROWING HEALTH CONCERN- AI INNOVATION

SRINIJA LANDA
3 MSC AI ML

In today's era of vegetarianism and veganism, which saves creatures but yet moves forward at middle age between 30 and 40, women face hyperpigmentation and malnutrition in which B12 plays a significant role. Cobalamin, also known as vitamin B12, is a water-soluble vitamin crucial for red blood cell formation, nerve function, and DNA synthesis, mostly found in meat, fish, and dairy products. Imagine Being vegan without consuming these rich B12 products, what consequences does the vegan person face? In public health concerns worldwide, with notable prevalence in India. A 2019 study reported that approximately 47% of the North Indian population is deficient in vitamin B12. In Financial Expression Health Care, one article states, "Vitamin B12 deficiency continues to be a major public health challenge in India; increased awareness and education are critical."

In today's AI era, integrating the B12 is how we can leverage the defense of the B12 deficiency, which balances the ecosystem in the food chain and human health. Since checking the B12 level, which costs roughly between ₹549 and ₹1625, is a time- and money-consuming process. Incorporating artificial intelligence (AI) and machine learning (ML) into healthcare can enhance the detection and management of vitamin B12 deficiency. For instance, researchers have developed optical sensors using Raman spectroscopy to rapidly detect vitamin B12 levels in human blood serum. This technology aims to provide a low-cost, portable solution for broad-scale vitamin B12 deficiency testing, facilitating early intervention and monitoring. Recent studies reveal "The University of Adelaide." Monday, 17 October 2016 "Developing a sensor for vitamin B12 deficiency" by inventing an optical sensor that can quickly detect vitamin B12 in diluted human blood. This could lead to a low-cost, portable test for B12 deficiency, which is linked to dementia and Alzheimer's disease.

The sensor, still in its early stages, uses Raman spectroscopy to measure B12 levels in under a minute without needing a full lab test. Further development could allow doctors to monitor B12 levels more efficiently, enabling early intervention and potentially reducing dementia risk. For AI-driven nutrients, we can use several models to detect the amount of nutrition consumption, such as CNN (convolutional neural network), which is an image detection model that excels in recognizing and quantifying nutrients from food images; the RNN (recurrent neural network) model that handles the time-series dietary data; and generative adversarial networks (GANs) that handle the data augmentation and natural language processing (NLP) textual analysis of nutritional details. Integrating AI and ML into nutritional science and public health strategies can improve the early detection and management of vitamin B12 deficiency, ultimately enhancing health outcomes.

WHY YOUR CAR HATES YOU: A MECHANIC'S GUIDE TO YOUR DUMBEST MISTAKES

KIRAN S MATHEW
3 MCA B

The Secret Life of Your Mistreated Vehicle

Your car has feelings. Well, not really—but if it did, it would probably be plotting its revenge right now. That mysterious puddle in your garage? Not an accident. That weird noise when you turn left? It's your car's way of saying, "I can't believe I got stuck with YOU."As a mechanic who's seen it all, I'm here to translate your car's desperate cries for help and explain why it's developing trust issues. Buckle up for a journey through the most face-palm-worthy automotive blunders that make your car contemplate driving itself straight to the junkyard.

"It'll Go Away on Its Own": The Symphony of Ignored Noises

That squealing sound when you brake? It's not your car singing along to your terrible playlist. It's literally screaming, "I NEED NEW BRAKE PADS, YOU MONSTER!" Here's a mechanic's guide to car noise translation:

- Squealing brakes: "Stop ignoring me or I'll stop ignoring that tree."
- Grinding metal: "Remember that 8000 repair you put off? Congratulations, it's 80000 now."
- Rhythmic clicking while turning: "My CV joint is about to send parts flying through your wheel well, but sure, keep driving to Starbucks."
- Knocking engine: "I'm literally eating myself alive in here."

True story: Had a customer drive in with a noise so loud I could hear him from three blocks away. "It just started," he claimed. The serpentine belt had worn down to its last thread, and there was enough metal in his oil to build a small robot. Just started? Sure, buddy. And I'm just starting to go bald.

The Check Engine Light: Nature's Most Ignored Warning Sign

Ah, the check engine light—that mysterious glowing symbol you've convinced yourself is just part of your dashboard's ambient lighting. Fun fact: Covering it with electrical tape doesn't actually fix anything. Shocking, I know. Your internal monologue when the light comes on:

1. "If I ignore it long enough, it'll get bored and turn off."
2. "It's probably just a sensor thing."
3. "The car's still moving, so how bad could it be?"
4. "I'll get it checked out next week." (They did not get it checked out next week.)

Meanwhile, your car is thinking: "You ignore my warnings? Fine. I'll wait until you're 200 kms from home on your road trip before I really show you what I'm capable of. "Remember: A 500 rupees diagnostic today saves you from the 20000 "I told you so" repair tomorrow.

Premium Fuel: Not Just a Suggestion for Your Honda Civic

Using the wrong fuel is like feeding a vegetarian a steak and wondering why they're upset. If your car requires premium fuel, that's not the manufacturer trying to scam you into spending more money. It's because your engine's compression ratio and timing are specifically designed for it. Using regular instead of premium in a high-performance engine can cause knocking that sounds suspiciously like your car saying, "I hate you" with each rotation of the crankshaft. Conversely, putting premium in a car designed for regular is just burning money. Your Toyota Corolla isn't going to suddenly transform into a Ferrari. It's just going to cost more to drive to your mom's house. And don't get me started on the people who've put diesel in gasoline engines. Your car doesn't want a diet change midway through its life. Trust me.

The Gas Pedal: Not an On/Off Switch

Your car has feelings about how you drive it, and right now, those feelings are mostly resentment. Signs you're treating your gas pedal wrong:

- You think "warming up" means going from 0 to 60 in 3.5 seconds
- Your passengers' heads permanently bob back and forth like dashboard ornaments
- You believe the space between gears is merely a suggestion
- Your tires have a shorter lifespan than mayflies

That jarring lurch when you stomp the accelerator is your transmission sobbing. The screeching tires aren't a sign of impressive performance—they're a cry for help. Cold engines need gentle acceleration. Transmissions appreciate smooth gear changes. Tires prefer not to leave parts of themselves on the asphalt. Revolutionary concepts, I know.

Oil: The Blood of Your Engine (That You Never Check)

"Oil changes are just a scam by Big Auto," said the guy whose engine was seized on the highway. Your car judges you hardest for this one. Oil is literally the lifeblood of your engine, reducing friction between moving parts that would otherwise melt together faster than your ice cream on a hot summer day. Yet somehow checking the oil level has become a forgotten art, like writing in cursive or talking to strangers without awkwardness. Signs your car is silently judging your oil neglect:

- The oil light comes on: "EMERGENCY! EMERGENCY! I'M DYING!"
- What you hear: "Meh, probably fine until payday."
- Your oil is blacker than a black hole: "I can't perform my lubricating duties if I'm basically tar."
- What you think: "As long as there's something on the dipstick, we're good."

Pro tip: If your oil looks like coffee, that's bad. If it looks like molasses, that's worse. If you can't remember the last time you checked it... your car is already plotting its spectacular demise, preferably when you're late for something important.

The Tire Pressure Monitoring System: Another Light You Expertly Ignore

That tire pressure light? It's not ambient lighting feature #2.Your tires lose about 1 PSI per month naturally, plus more when temperatures drop. Yet many drivers treat tire pressure like their ex's birthday—something they used to care about but now actively avoid thinking about. Underinflated tires don't just hurt fuel economy; they're also unsafe and wear unevenly. Overinflated tires give you a ride quality comparable to a shopping cart on cobblestones. Your car, watching you ignore the TPMS light for the third week: "I literally have sensors specifically designed to tell you this one thing, and you STILL ignore me."

Air Filters: The Forgotten Heroes

Asking your car to breathe through a filthy air filter is like asking you to run a marathon while breathing through a coffee stirrer. Signs your air filter needs changing:

- It's no longer white or tan but instead looks like it was excavated from an archaeological dig
- You could build a small rodent civilization with the debris trapped in it
- You genuinely can't remember the last time you checked it

Your engine needs approximately 10,000 gallons of air to burn a single gallon of fuel. When was the last time you thought about that? Exactly.

Conclusion: A Peace Treaty With Your Vehicle

Your car doesn't actually hate you—it just wishes you'd listen to its increasingly desperate attempts to communicate. The good news? Making peace with your vehicle is surprisingly easy:

- Listen to weird noises right away
- Respect warning lights as actual warnings
- Use the correct fluids and fuels
- Drive like there's a cup of hot coffee on your dashboard
- Check your oil more often than you check your ex's Instagram

Remember: preventative maintenance isn't just some scheme to separate you from your money. It's the difference between a car that lasts 300,000 kms and one that dramatically gives up on life at 85,000.Your car is ready to forgive you. Are you ready to be a better owner?

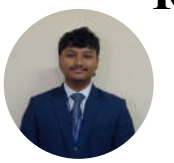
THE PSYCHOLOGICAL IMPACT OF ENVIRONMENT ON CONFIDENCE

KARAN AGARWAL
3MCA B

They say you are the average of the five people you spend the most time with, and this rings true when examining the intricate relationship between confidence and environment. The people around us and the settings we inhabit have a profound influence on how we perceive ourselves and our potential. A person with ambitious dreams often finds their growth tethered by societal expectations. Society sets invisible boundaries that can either stifle or support an individual's aspirations. Breaking free from these confines often requires either a disregard for societal norms or a deliberate shift in environment. But here lies the paradox: humans are inherently social beings, shaped by the collective fabric of their communities.

This means even the most determined individual can fall prey to societal manipulations, whether through cultural norms, peer pressures, or even familial expectations. Living alone presents an intriguing alternative. It offers the freedom to craft one's own environment and take complete ownership of life's direction. However, this autonomy is a double-edged sword. On one hand, it provides a fertile ground for self-discovery, productivity, and personal growth. On the other, it can lead to loneliness and despair if not approached mindfully. The beauty of solitude lies in its ability to give life's reins back to the individual. With no external influences to blame, it becomes a test of self-discipline and resilience. Each day becomes an opportunity to expand comfort zones, to grow in small, meaningful ways, and to redefine one's personal narrative.

Ultimately, whether surrounded by people or in solitude, the key lies in intentionality. Surround yourself with those who elevate you, and design an environment that nurtures your confidence and dreams. Remember, life is a highway, and you're the driver—nobody else is in your car. Regardless of whether you're driving a Lamborghini or an Alto, if you're heading in the right direction, you will reach your destination someday, surely.



REVOLUTIONIZING EXAM PREP WITH AI: TOP TOOLS FOR STUDENTS

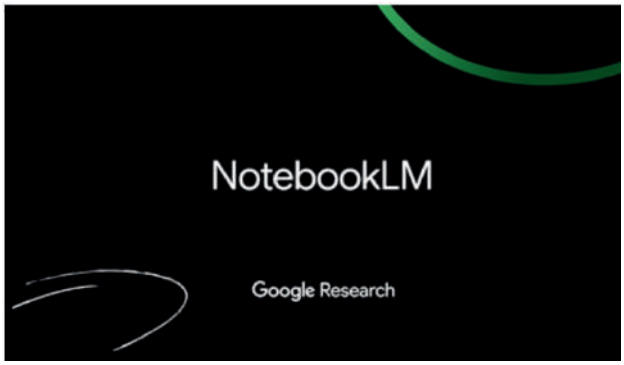
GEBIN GEORGE
3MCA B

We, as students, are always searching for the best studying techniques. Recently the tools that are powered by AI are improving the learning process due to technological progress. Today, I am going to tell you about several of the best AI-driven study aids that can enhance your learning experience and help you to stay ahead of the curve and also prepare for exams.

1. NotebookLM: AI Research Assistant & Podcast Studio

NotebookLM, a tool developed by Google, helps us students to engage with study materials in a more interactive way. It features a chat tool and a studio feature; these tools let students create custom podcasts that they can then listen to. If you struggle with a concept, you can adjust the podcast to explain it in simple terms with relatable analogies and examples.

The interactive mode allows you to take part in the conversation as the third host, ask questions, and change the conversation in a way that helps you to understand the concepts better. This is great for students who absorb information better when hearing it explained, especially while commuting.

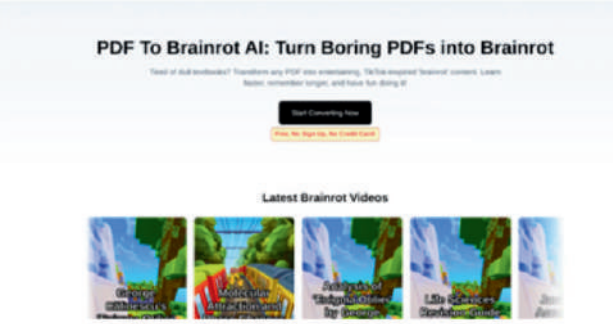


2. StudyPDF: AI-Enhanced Learning

StudyPDF is a tool that helps students in making summarized PDFs, creating mind maps, and generating flashcards. The **mind map feature** is very useful, as it helps in organizing concepts logically, showing what to learn next. It also offers quizzes based on the topic from the PDF; it also has flashcards to help with retention of the concepts and, lastly, an AI tutor that would answer questions based on content from the PDF.

P3. Brainly: AI-Powered Peer Learning

Brainly is a platform similar to StudyPDF where students can ask and answer questions. The AI acts like a tutor as well as provides instant solutions while allowing for peer discussions, making it useful for gaining different perspectives and clarifying doubts quickly.



4. PDF to BrainRod—Video Summaries for Quick Learning

PDF to BrainRod quickly turns the contents of PDFs into one-minute video summaries to help people with short attention spans to grasp content.

5. ChatGPT—Your AI Study Companion

This tool does not need any introduction; it's also the most known and the most commonly used. ChatGPT helps with summarizing notes, explaining difficult concepts, generating practice questions, useful audio brainstorming sessions, and even structuring essays. It's a versatile tool that can adapt to different study needs.

Why Use AI for Studying?

AI helps the students save tons of time, increases the clarity of the material, and tailors the test preparation to suit the individual study methods. By using voice recognition software, which promotes better outcomes in learning over composition, students can learn better before time is gone.

Final Thoughts

Machine learning applications such as NotebookLM, StudyPDF, Brainly, PDF to BrainRod, and ChatGPT really help the student to understand and review the lessons, and thus, the learning process is becoming more efficient, interesting, and enjoyable. Putting them into practice will let you observe firsthand the incredible changes AI can bring to your education!

MENTAL HEALTH AND GAME DESIGN

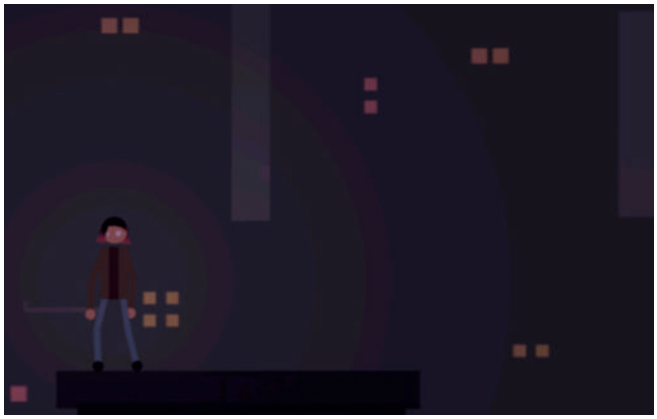
KEVIN ROY
3MCA A

A Dystopian World

The game Memento takes place in a dystopia where the rich live high above, and the poor are left below. The city has two parts: the City and the District. In the City, life is safe but controlled, while in the District, the streets are broken, and people tend to remember things that they shouldn't.

Rei, a District citizen, starts remembering this she shouldn't have.Now, their past is returning in broken pieces, revealing a secret no she wasn't meant to remember.As Rei explores the District, a once-thriving part of the city now left to rot, they uncover a terrifying truth. Others like her are being hunted down and permanently erased.

With Enforcers closing in, Rei tries to escape. But her mind begins to betray them. They see people who may not exist. They fight enemies that could be illusions. And during a brutal battle, a buried memory resurfaces—Rei wasn't just any agent. They were one of them.



Mental Health in Memento

This game lets players experience mental health challenges. It includes anxiety, panic attacks, and schizophrenia through gameplay.

Panic Attacks: When Fear Takes Over

In extreme fear, Rei loses control, not just health. Players experience heavy breathing and slower movement.. The game also uses audio and visual cues, like a racing heartbeat and a darkening environments. Movement may become unresponsive, making it harder to escape danger. These mechanics show what a panic attack can feel like.

Fighting Illusions: Schizophrenia in the Game

Rei's schizophrenia makes reality unclear. Some combat elements come from this condition. Players may talk to characters who are not real, and the environment may change suddenly. The game shows the real challenges of schizophrenia instead of using it as a horror element.

World Building

Memento has a dark world that looks empty and broken. The District was once a busy place, but now it is silent and falling apart. Ruined buildings, flickering lights, and abandoned streets show a city that has been left behind.

The game uses environmental storytelling to show its history. Cracked signs, scattered notes, and damaged machines give clues about what happened. Graffiti and old messages reveal the fears of those who lived there.

Sound and music add to the atmosphere. Footsteps echo in empty streets, distant whispers create unease, and Rei's heartbeat gets louder in danger. These details help players understand Rei's world and experiences.

Why This Game Matters

Mental health is often misunderstood. Memento lets players step into Rei's world, helping them understand anxiety and schizophrenia in a personal way. By experiencing these struggles through gameplay, players can gain a deeper sense of empathy for those who live with these conditions.

Work In Progress

The game is still being developed, with a focus on thoughtfully telling the story. Everything, from how it plays to how it looks and feels, is being shaped to create a deep and engaging experience. With its mix of story, gameplay, and real mental health struggles, Memento is becoming something unique. More updates will come soon.

PRE-PLACEMENT TRAINING PLATFORM: AN AI-DRIVEN APPROACH TO ENHANCE PLACEMENT READINESS

PRASHANT SINGH AND PUSHPENDRA SINGH
3MCA B

Introduction

Today's students face lots of challenges during campus placements. The disorganized support materials and management make things even tougher. Conventional training methods usually focus on separate aspects such as coding challenges, aptitude tests, or interview preparations, which do not ensure a complete learning process. To solve this particular problem, a pre-placement training platform has been designed with artificial intelligence at its heart. This combines AI-based interview simulations, coding challenges, and aptitude tests, thereby providing the students with an organized and interesting learning experience. The platform offers exciting definitions through gamification, personalized dashboards, and real-time feedback, ensuring that students are well prepared for placement procedures.

Challenges in Placement Preparation

Aptitude tests and human resource simulation interviews are not available on a number of current platforms, such as LeetCode and HackerRank, that focus primarily on technical skills. Offline pre-placement training is offered in universities, but it is mostly generic and lacks focused feedback. Besides, traditional training lacks performance tracking and continuity in real-time. Recent studies further underline the rising importance of AI in recruitment, specifically as organizations continue to roll out automated screening tools, algorithms for evaluating resumes, and AI-based interview assessments. In addition, gamification strategies, such as leaderboards, badges, and interactive tests, have also proved to enhance motivation and engagement levels.

The AI-Driven Pre-Placement Training Platform

Methodology and System Architecture

The platform follows a modular development approach:

- Requirement Analysis & Design: Finding gaps in the existing placement training and providing a holistic solution to it.
- Implementation & Testing: Using a specific database to maintain a track of user progress and use cutting-edge technologies for the frontend.

Benefits and Future Enhancements

This AI-based pre-placement platform offers several advantages over traditional forms of training:

- Structured Learning Path: Make sure the students go through everything required during placement.
- Real-Time AI Feedback: Improve interview delivery and work.

Methodology and System Architecture

- AI Integration: NLP models analyze candidate responses to HR interviews in real-time.
- Performance Analytics: Interactive dashboards show the progress of students and point out areas that need work.

Benefits and Future Enhancements

- Gamification for Engagement: Keep the student motivated till he achieves his preparation.
- Analytics for institutions: Help universities track student progress and improve their training programs.

Some of the features in development are peer-to-peer mock interviews, improved AI models for marking your responses, and language task support for coding challenges. These updates will supposedly exponentially increase placement success rates and give students the confidence and skills to succeed in hiring processes.

Conclusion

This AI-based pre-placement training platform is a game-changer for students preparing for the campus placements. It merges technical training with aptitude tests and AI interviews in one framework, ensuring banishment from whatever chaos in the learning process. The platform, in the end, provides an interface from academia into industry by interacting with involvement-driven features and real-time feedback, hence improving the chances of placements.

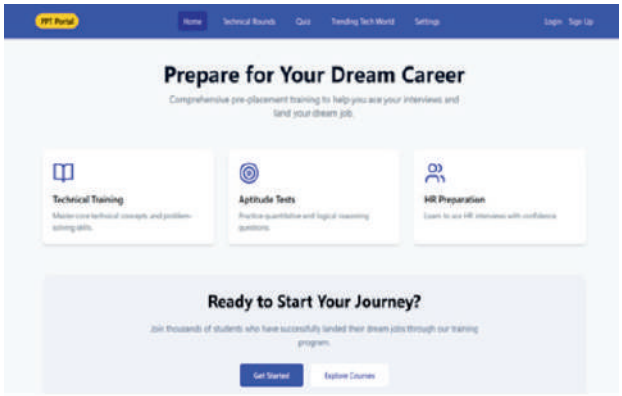


Figure 1: Home Page

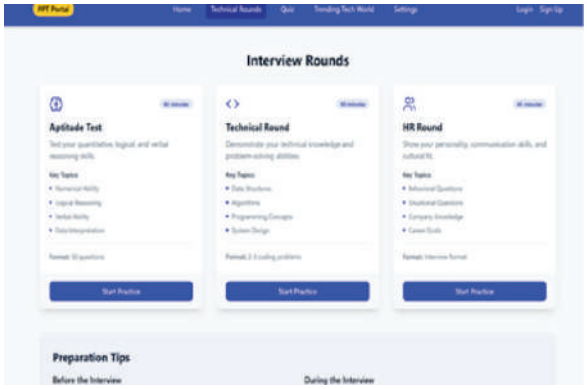


Figure 2:Module Page

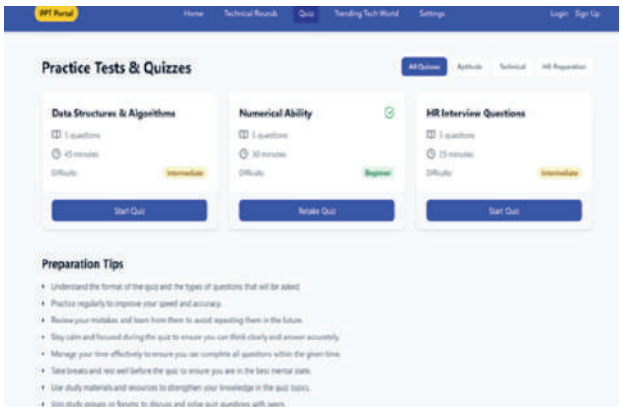


Figure 3:Quiz Page

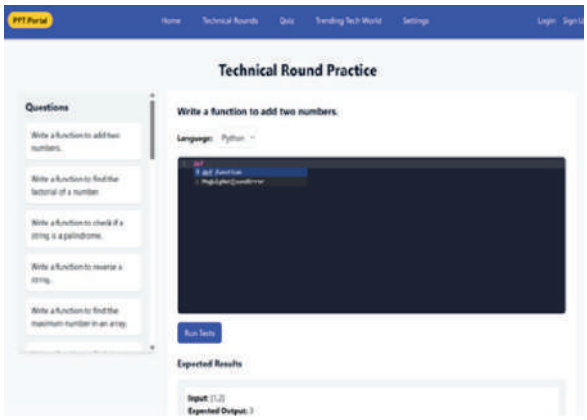


Figure 4:Technical round Page

CARE SYNC: A COMPREHENSIVE SOLUTION FOR MEDICATION AND DIETARY MANAGEMENT

JOEL JOHN AND AGNO C BENNY
3 MCA B

Abstract

The managing of chronic conditions needs a complete method which combines treatment medication use alongside food choice analysis. The current range of medication reminder applications functions well by monitoring medication intake but ignores dietary factors that contribute to poor health outcomes. Care Sync functions as a mobile platform which combines

medication alerts with a food detection feature that recognizes dietary elements to provide patients a proactive healthcare system. This paper examines the development process and essential features of Care Sync as it enhances healthcare results for patients controlling chronic diseases.

Introduction

Successful management of diabetes and migraines and high cholesterol and fatty liver disease needs something beyond regular medicine use. Symptom management heavily relies on nutrition choices but most patients remain unaware about which foods worsen their health problems. The current medication reminder applications assist medication tracking but do not include dietary protocols as part of their system. The system Care Sync completes this void by linking monitoring drug usage to food barcode identification functions which produce instant analytical reports about patient food and medication activities. The new method strengthens clinical judgments among patients along with caregivers which results in improved health results.

Problem Statement

Most medication reminder applications only focus on tracking drug prescription adherences while ignoring vital nutrition-related aspects. Chronically ill patients tend to consume foods unknowingly which triggers their symptoms even when they follow their prescribed medicine regimen. The existing medical applications lack the ability to track extended health outcomes that result from unattended doses and food intakes. The Care Sync system joins dietary observation with medicine reminders to generate a detailed method for chronic disease care.

Objectives of Care Sync

The main objectives of Care Sync involve:

➔ The application enables users to merge medication reminder functions together with food sensitivity monitoring capabilities.

➔ Care Sync aims to identify possible medical dangers which stem from incorrect nutrition and medication non-compliance.

➔ The system requires improvements for caregiver alerts because real-time health notifications will improve support along with intervention effectiveness.

➔ The application will show users comprehensive health information that features medication adherence statistics and food history details

Existing Systems and Their Limitations

The medication management applications Medisafe plus MyTherapy enable users to receive dosage alerts and monitoring features and automatic caregiver alerts. The present applications do not provide features for food scanning or health prediction that align with dietary practices. Current applications focus only on medication adherence although they fail to combine lifestyle elements that strongly affect chronic disease management. The current approach demonstrates why Care Sync provides a suitable answer since it addresses all aspects.

Proposed System: Care Sync

The care management of chronic conditions improves using Care Sync which unites food scanning features and trigger identification systems with medication tracking capabilities. The primary strength of the application lies in its ability to evaluate food items which detect dietary triggers for migraines, diabetes and high blood pressure and fatty liver disease. The main benefits which Care Sync offers to users include:

➔ Food Scanning lets users check their food items immediately for compounds which might activate their chronic condition.

➔ The system analyzes health records together with dietary patterns to generate forecasts about future health conditions thus enabling users to understand their entire medical situation better.

➔ The system improves caregiver-support through notifications that send instant alerts when patients fail to take their medications or face dietary triggers.

➔ The application presents health data through visual information which helps users recognize development patterns and monitor their advancement better.

System Architecture and Implementation

Care Sync operates through various technical components which comprise the following sectors:

- The front end development section employs Flutter combined with Dart to make the application operate similarly across Android and iOS platforms.
- The application handles Backend and Database operations through two solutions including Firebase for real-time data synchronization and MySQL for structured data management.

Third-Party API Integration:

- Users can access food nutritional information through the Food Database API by using its food scanning feature. Health & Medication APIs for medication tracking and adherence monitoring. Firebase Messaging for real-time push notifications to users and caregivers.
- Through the use of machine learning models, the healthcare system gains access to AI-driven predictive analytics tools for assessing dietary knowledge and medication patterns to generate individualized health insights.
- The application maintains its data across platforms through SQLite local storage which works offline and the secure backup and multi-device synchronization features of Firebase Cloud Storage.

Results

The first deployment of Care Sync shows positive findings. The application's friendly design can be seen through screenshots which display the login interface and medication management screens. The medication adherence tracking system functions smoothly alongside food scanning to supply users with useful health information and caregivers with rapid notification alerts.

Conclusion and Future Scope

The innovative aspect of Care Sync in chronic disease management involves uniting dietary monitoring services with medication tracking features. Care Sync delivers real-time notifications together with health prediction capabilities and gives users support from caregivers which enables them to make smart healthcare choices. Future developments involve conducting research that will compare Care Sync to existing applications to enhance usability and improve product features. The innovative method creates opportunities for better chronic disease management assistance through technology-based solutions.

CHOOSING THE RIGHT DBMS FOR INDUSTRY: SQL, NOSQL, OR NEWSQL?

ARUN MP
3 MCA B

Businesses in today's data-driven era need to select the appropriate Database Management System (DBMS) to manage copious amounts of structured as well as unstructured data. SQL databases have been the stalwarts of enterprise applications long enough to provide consistency and ACID compliance. With industries grappling with new scalability issues, flexibilities, and performance requirements, NoSQL and NewSQL databases are proving to be viable alternatives.

SQL databases follow a relational model, with defined schemas and ACID properties to ensure data integrity. Finance, healthcare, and government sectors continue to depend on SQL because of its strong support for transactions and consistency assurances. SQL databases tend to demand vertical scaling, which is expensive and cumbersome to manage huge datasets

NoSQL databases such as MongoDB and Cassandra are horizontal in scale, allowing businesses to efficiently process large-scale unstructured data. NoSQL databases accommodate flexible schemas, which suit applications used in e-commerce, social networking, and IoT. NoSQL databases sacrifice immediate consistency for availability in most cases, adhering to the BASE (Basically Available, Soft state, Eventually consistent) model. NoSQL databases play a critical role in meeting real-time data processing requirements, particularly in web applications.

NewSQL databases like Google Spanner and CockroachDB try to balance the advantages of SQL and NoSQL by providing distributed scalability while being ACID compliant. These databases are used more and more in cloud environments where transactional consistency and high availability are needed. NewSQL solutions give effective performance to industries that require high-volume transactions without sacrificing consistency.

With the advent of big data, cloud computing, and AI, enterprises need flexible DBMS systems that can accommodate a combination of structured and unstructured data. NoSQL databases are increasingly popular in web-scale applications, and NewSQL is emerging as an enterprise favourite for scalability with strong consistency. The future of DBMS will probably be based on hybrid models that use SQL for structured data management and NoSQL for high-performance scalability.

SQL, NoSQL, or NewSQL, whichever to opt for, ultimately hinges on specific requirements in industry. SQL rules where industries necessitate high consistency, NoSQL for those that involve multi-grained and mass-level data, and NewSQL being a balancer which scales without losing support for ACID properties. With passing time, evolution in industries means right DBMS will

play the decisive role towards efficient functioning, optimum performance, and innovative thinking while handling the data.

OPTIMIZING REAL-TIME SIGN LANGUAGE TRANSLATION: WHY RANDOM FOREST OUTPERFORMED CNN

12

ANWIN K BIJU
3MCA A

As a machine learning engineer developing a Sign Language Translator application, I faced the critical challenge of achieving high accuracy in real-time from live webcam input under varying environmental conditions. While Convolutional Neural Networks (CNNs) are often the default choice for computer vision tasks, my research and implementation led me to select the Random Forest algorithm instead—a decision that significantly enhanced the performance of my solution.

Technical Approach: Leveraging Hand Landmark Features

My implementation leverages MediaPipe Hand Tracking to extract precise hand landmark features—specifically the 3D coordinate points (x, y, z) of hand joints—rather than processing raw image data. This approach creates a representation of hand gestures as numerical feature vectors rather than pixel-based images, enabling several key advantages. .

Six Key Advantages of Random Forest for Landmark Based Sign Language Translation

1. Environmental Invariance

CNNs are highly sensitive to visual conditions such as lighting, skin tone, and background composition. By processing numerical landmark coordinates rather than raw images, Random Forest achieves remarkable invariance to environmental factors, resulting in consistent performance across diverse usage scenarios.

2. Computational Efficiency

While CNNs demand substantial computational resources for both training and inference — often requiring GPU acceleration—Random Forest operates efficiently on landmark coordinate data with significantly reduced computational overhead, enabling smooth real time performance on standard hardware.

3. Expedited Model Development

Training a CNN on a comprehensive sign language dataset typically requires hours or days of computation. In contrast, my Random Forest implementation, processing only the essential landmark coordinates, completes training in minutes while maintaining high accuracy— dramatically accelerating the development cycle.

4. Robust Performance with Limited Training Data

CNNs generally require extensive datasets to generalize effectively and mitigate overfitting. Random Forest's ensemble approach provides inherent resistance to overfitting and performs reliably even with the limited custom dataset available for this specialized application.

5. Model Interpretability

Random Forest provides valuable transparency by quantifying the contribution of specific landmarks (finger positions, joint angles, etc.) to classification decisions. This interpretability offers insights into the model's decision-making process that are typically obscured in deep learning approaches.

6. Real-Time Response

For a practical sign language translation tool, instantaneous feedback is essential. Random Forest delivers near-immediate predictions after training, creating a responsive user experience without latency—critical for effective communication applications.

Future Considerations

While Random Forest proves optimal for my current implementation based on hand landmarks, I recognize that CNNs would likely outperform for raw image processing. Future enhancements incorporating facial expressions, full-body gestures, or contextual elements may warrant a transition to deep learning approaches.

Conclusion: Algorithm Selection Through Data Understanding

This project has reinforced the principle that understanding your data's inherent structure is paramount to selecting the appropriate algorithm. For numerical feature-based gesture recognition from landmark data, Random Forest demonstrates clear advantages in efficiency, generalization, and real-world performance.

Machine learning practitioners developing similar real-time gesture recognition systems should consider whether their input data's nature might make ensemble methods like Random Forest more suitable than deep learning approaches, potentially delivering superior results with significantly less complexity.

I welcome insights from fellow professionals with experience in gesture recognition, sign language translation, or human-computer interaction. What has your experience been with algorithm selection for real-time classification tasks?

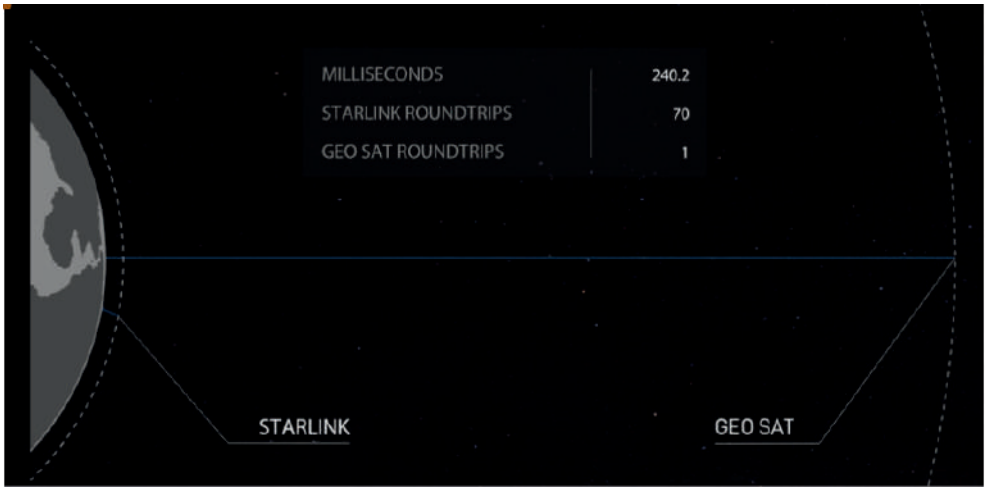
This article reflects my professional experience implementing machine learning solutions for accessibility applications. I'm open to collaboration and knowledge exchange in this domain.

STARLINK: INTERNET FROM SPACE

JOEL ABHISHEK
3MCA B

Starlink is a service provided by SpaceX that provides internet access via a network of satellites.
Starlink uses a constellation of satellites operating in low Earth orbit. But this is different from traditional satellite internet that rely on single satellites operating far from the Earth at Geostationary orbits. This design reduces the delay or latency in sending and receiving data. With a much lower delay in transmission Starlink satellites are way more suitable for activities like streaming and online gaming.
Let's take a look at some of the technologies that make up Starlink

Low Earth Orbit (LEO) Satellites: Starlink uses Low Earth Orbit satellites which orbit at around 550KM. Traditional internet satellites orbit at Geostationary orbits which is usually around 35,000KM. However, Starlink satellites are much closer resulting in significantly lower latency.
Starlink satellites orbit the Earth very fast since they are at LEO They complete a revolution in every 90 minutes which means the ground station needs to switch between satellites approximately every 4 minutes to maintain continuous service.



Phased Array Antennas: Phased array antennas are important for both the user terminals which are satellite dishes installed at the user's end and the satellites themselves. These antennas are made up lots of smaller antennas that work together. With these smaller antennas it becomes possible to steer or direct the radio waves which is very useful for tracking the fast-moving satellites

Beamforming: What Starlink antennas do is that they create a focused beam that can reach the satellites far into space. They do this by combining the power of individual antennas in the phased array to generate a strong and directed signal. .

Ku and Ka Microwave Bands: Starlink makes use of these specific microwave bands for transmitting signals between their satellites. Ku-band (12 to 18 GHz)- is used for the initial user connectivity. It offers a good balance of cost-effectiveness and performance and allows the use of smaller antennas and focused beams. Ka-band (26.5 to 40 GHz)- Are used for higher bandwidth and faster data transfer rates.

Optical Inter-Satellite Links: Beyond Ku and Ka bands. Newer Starlink satellites are equipped with optical inter-satellite links are basically just lasers that the satellites can use to communicate with each other directly. This technology enables faster data transfer within the constellation.

64QAM (Quadrature Amplitude Modulation): 64QAM is a signal encoding technique for encoding digital data in an analog signal. This method encodes data by varying the amplitude and phase of the transmitted signal. 64QAM gives two benefits- One, it allows Starlink to encode a lot of data into the bandwidth so a lot of data can be transmitted. Two, it provides a much high transmission rate.

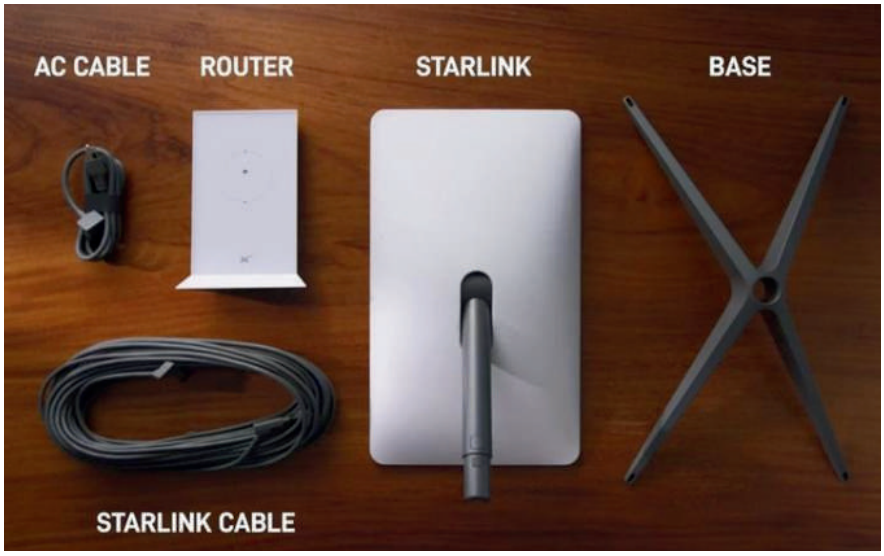
Hall-Effect Thrusters: All LEO satellites experience atmospheric drag since they are close to the earth. This means that the atmospheric particles hit the satellites causing them to decelerate and drop their orbits. So, they all need periodic thrust boosts to maintain their orbits. Starlink satellites use Hall-effect thrusters which use gases like Krypton or Argon to provide propulsion

Frequency Selection: Starlink antennas avoid interference from other sources of electromagnetic waves such as those from radio stations, cell towers, and other satellites. They do this by selecting a narrow range of frequencies that they would operate in.

Ground Stations: Ground stations are what Starlink uses to connect to the global internet. They have multiple antennas to connect to many satellites at once. Starlink has many ground stations all over the world allowing a much faster connection to the internet.

Why Starlink?

Starlink's most useful and important application is its ability to provide internet access to remote places that would usually have no internet coverage. With just a simple provided kit consisting of a satellite dish, a dish mount, and a Wi-Fi router base unit. People can easily experience decent internet speeds in the middle of nowhere. This capability is very useful for communities where traditional internet infrastructure is not available or unreliable. With Starlink it becomes possible to access various economic, education, healthcare and other opportunities that were previously thought impossible to make use of in such remote regions of the world.



However, Starlink has been used in some other ways since its inception mostly in the military -

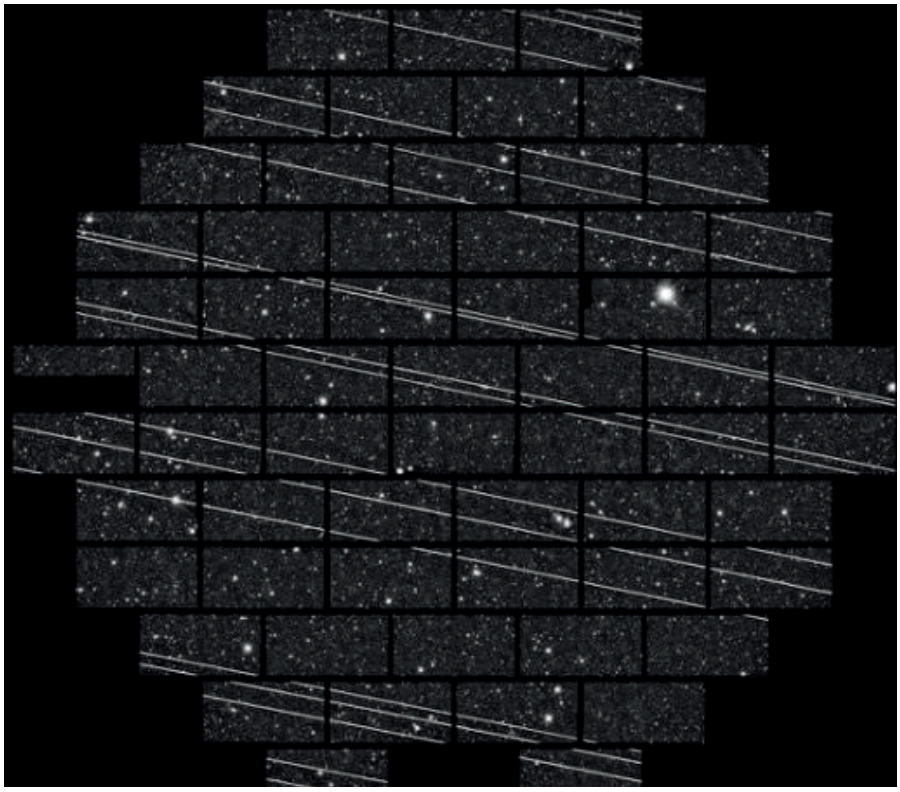
- **Military:** SpaceX develops military satellites for the American Space Development Agency (SDA) focusing on missile defense. Starlink has also been tested and used for military communications with aircraft and in battlefield management.
- **Russo-Ukrainian War:** Starlink was activated in Ukraine and became an important part for the Ukrainian military's operations such as communication and drone operations.
- **Criminal Use:** Starlink is reportedly used to support scam centers in Southeast Asia.

Why not Starlink?

Impact on Astronomy: The large number of Starlink satellites has raised concerns within the astronomical community about light pollution. These satellites produce a lot of electromagnetic waves as they orbit the planet and when Astronomers look through their telescopes these extra electromagnetic waves are picked up as well essentially creating noise and distortions.

In 2019, observations showed signal loss and image noise correlated with the transit of a Starlink satellite train, demonstrating the impact of visible interference.

SpaceX has taken some measures to reduce the albedo (reflectivity) of the satellites, such as launching a "DarkSat" with an experimental coating and introducing sunshades. However, astronomers have found these measures to be only marginally effective.



Increased Risk of Satellite Collision:
The Kessler syndrome is a scenario in which one space debris or satellite collides with another creating even more space debris which then collides with more debris or satellites. This is effectively a chain reaction which eventually makes LEO completely unusable. Experts have said that the huge number of Starlink satellites in orbit creates a risk of causing the Kessler syndrome.

Starlink has had multiple incidents of near-miss collisions. Once with a European satellite and another time with a Chinese Space Station. These incident show that the large number of satellites do have a increased risk of collisions.

SpaceX has stated that satellites are launched at a lower altitude and failed satellites are expected to deorbit within five years without propulsion. SpaceX satellites will manoeuvre if the probability of collision is greater than 1 in 100,000, which is a more conservative threshold than the industry standard of 1 in 10,000. SpaceX has budgeted for a significant number of collision avoidance manoeuvres per satellite.

DEBUGGING LIFE: A CS STUDENT'S BATTLE AGAINST STRESS

PARGAONKAR SHASHI SHIRISH
3MCA A

INIT: The Beginning

Sid began his journey at Christ University, Bangalore with big dreams of becoming a software engineer. The campus buzzed with possibility as he set up his development environment for the first time, feeling he had found where he belonged.

EXCEPTION: The Unexpected Error

Months later, Sid found himself drowning in assignments and deadlines. During a late-night debugging session, he first encountered Stress—a looming presence that whispered doubts about his abilities and future. The voice followed him everywhere, turning his passion into pressure.

LOOP: The Downward Spiral

Sid's life became an endless loop of anxiety. His grades slipped, sleep became scarce, and his diet consisted mainly of instant noodles and caffeine. His once-organized room now resembled a heap with no clear data structure.

```
while(true) {
    try {
        completeAssignment();
        studyForExam();
        workOnProject();
        maintainSocialLife();
    } catch(BurnoutException e) {
        // No exception handling implemented
        continue;
    }
}
```

BREAKPOINT: The Turning Point

Professor Sharma noticed Sid's deteriorating condition and offered wisdom: "You don't beat Stress by ignoring it. You debug it." He explained that mental well-being deserves the same systematic approach as troubleshooting code.

REFACTOR: Debugging Stress

Sid began treating his mental health like code—systematically identifying and fixing issues:

1. **Prioritize Tasks**: Breaking work into manageable chunks using a personal Kanban board
2. **Pomodoro Technique**: Implementing focused 25-minute work sessions with breaks
3. **Exercise and Meditation**: Clearing his mental cache through physical activity
4. **Seek Help**: Reaching out to friends and communities when stuck
5. **Prioritize Sleep**: Recognizing rest as essential for efficiency
6. **Social Connection**: Maintaining relationships and support networks
7. **Digital Detox**: Minimizing notifications and distractions

IMPLEMENTATION: The Practice

Implementation wasn't easy, but Sid adopted a debugging mindset—seeing setbacks as opportunities to refine his approach. He tracked his habits, identified optimal study times, and organized his workspace.

RESULTS: The Transformation

Three months later, Sid saw significant improvements in his grades, understanding of concepts, contributions to projects, relationships, and physical health.

FINAL BOSS: The Ultimate Test

During end-semester exams, Stress made one last attempt. But this time, Sid was prepared. He broke down problems methodically and approached challenges with calm confidence.

RECURSION: Passing It On

Later, Sid noticed a struggling junior and offered help, sharing what he had learned about debugging not just code, but life itself.

CONCLUSION: The Continuous Deployment

Stress never completely disappeared, but Sid now had tools to manage it. His approach to life had become like a well-maintained codebase—organized, efficient, and adaptable. He realized that greatness wasn't just about writing flawless code but building a balanced, resilient life.

```
function debugLife() {
    while (alive) {
        identifyIssues();
        implementSolutions();
        rest();
        grow();
        helpOthers();
    }
}
```

"The best error message is the one that never shows up." - Thomas Fuchs

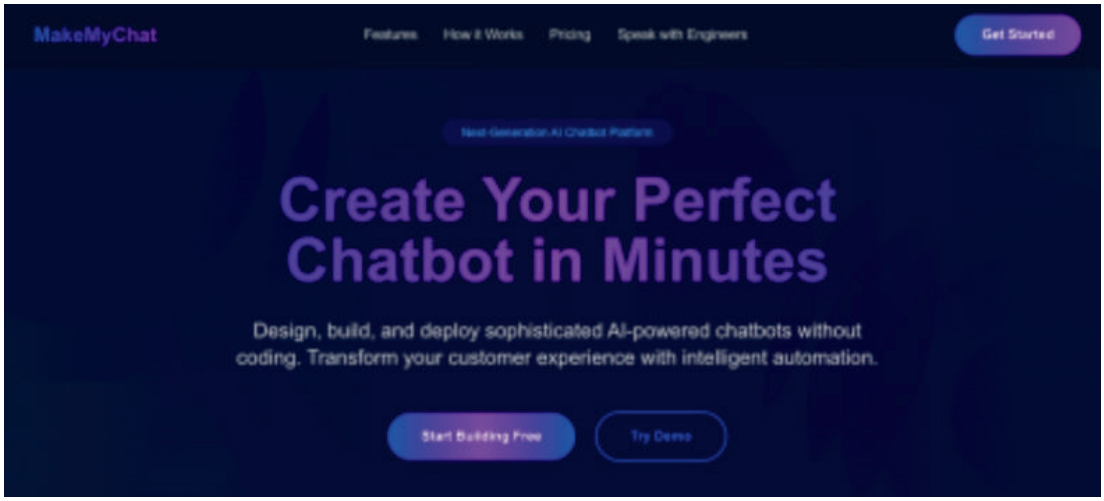
"The same is true for stress." - Sid

THE NO-CODE AI MAKERS - THE FUTURE OF AI CHATBOT CREATION

SUMITH MEENA AND SHREY JAIN
3MCA B

At the height of artificial intelligence evolution, where the everyday businessperson and entrepreneur craves simplistic yet effective options for implementation and retention of AI features for their websites and apps, solutions are emerging daily. No-Code AI Makers is the answer. We render a no-code approach to the creation and application of AI chatbots with minimal implementation and effortless engagement. Our keys to success rely on a user-driven parsing control mechanism, a billing approach that includes pay-as-you-go, and transparency of procedures against competitive offerings.

What Sets Us Apart

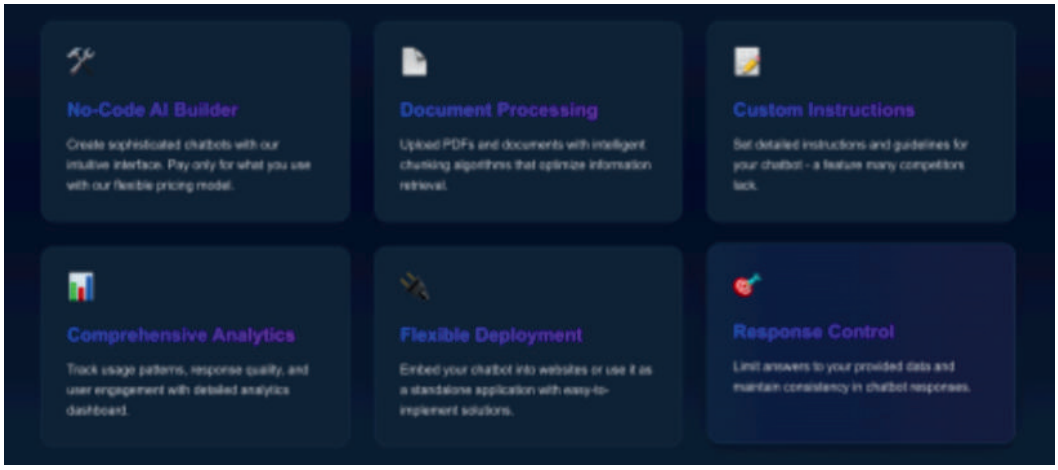


No-Code AI Makers stands out from the competition with our RAG (Retrieval-Augmented Generation) application. Many AI generator providers are vague about how their generation works. With No-Code AI Makers, we make it clear how our generator works. You parse. You parse as much or as little data as you want and when you want. You can control when this happens and how frequently you assess the accuracy and applicability of generated responses. You dictate response generation, meaning it does what you want it to do; literally, all it generates is a response to what you tell it via your parsing material. The more you parse, the more responses that make sense. It decreases hallucinations and renders responsibility for when fallacies arise. If it's a prompt/answer/parse that wasn't parsed to generate the answer, it's because it wasn't parsed in the first place.

Transparency in AI Processing A hallmark feature of No-Code AI Makers is our Retrieval-Augmented Generation (RAG implementation), which hinges on RAG processing within our own creation and utilization. Whereas other companies are vague as to how they create data and respond or create responses, we detail how our system works. This not only allows the user to understand how their AI models are created, but also helps them choose better when it comes to the implementation and installation of the chatbot. Furthermore, we also boast a micro-management opportunity for adjustment, which allows for what is retained, how the AI speaks, and what answers it provides. With our implementation, we can all but guarantee that answers are provided so long as the information given was used; thus, quality assurance is much higher and AI hallucinations and false answers are all but avoided.

Answering with Data Provided Where many AI chatbots provide answers based on anything and everything—be it public domain webs or their training efforts—our implementation provides answers based on **only what the user provided.** This fosters reliability and ensures organizational compliance as our chatbots work well for academic institutions, company HR policy and procedure manuals, as well as customer service and customer support.

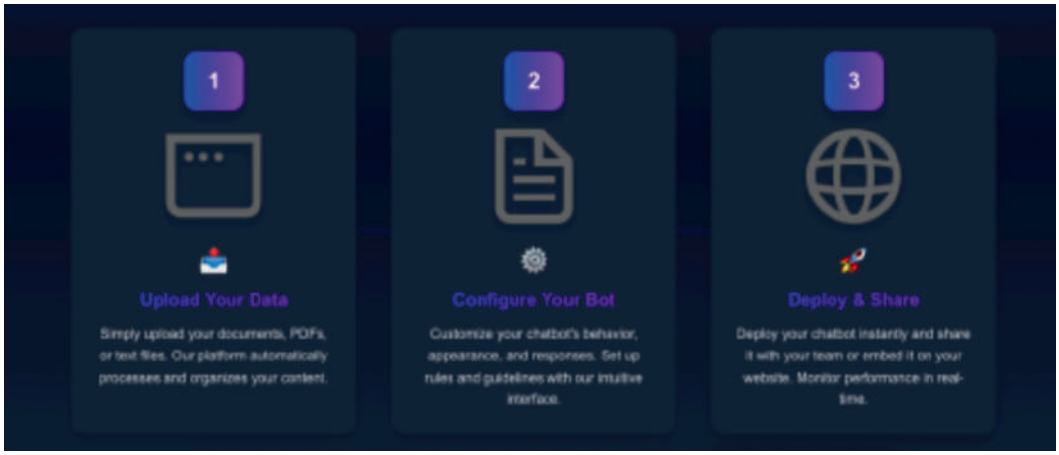
Analytics for Performance Optimization



We provide comprehensive analytics to ensure users are getting everything they need from their chatbot and optimizing performance. For example, users can find out how many people accessed the chatbot, which questions were asked the most, and so on. Using this data, they can tweak how information is conveyed to enhance the experience for future users.

Integration Options for Ease of Access

Whether they want their chatbot embedded into other websites or used as a standalone option, our platform allows for easy access. Companies may want their AI-powered customer service helper right there on their website and teachers may want a private knowledge base for their students. Whatever the case may be, our option works. Furthermore, users can share their chatbots with other people privately or publicly.



Include PDFs & Instruction Formatting for More Customization

One element lacking in some of the other DIY options for creating your own chatbot is instruction formatting. We allow our users to use mattering | PDF upload features and instructional integrations to dictate how the bot should respond. This is especially important in fields that involve a lot of compliance and require correct information like legal, medical, and corporate training.

A Wizarding Process At Work

1. You Upload Data: Literally. A document or impressively detailed prompt. 2. Chunking & Preprocessing: Yours or a system-generated suggestion. Regardless, data is chunked appropriately.
3. AI Training Model: Based on the processed data uploaded. Yet responses are still relevant to contextual requests.
4. Release: Access is granted via a URL which can be embedded, added, or sent to the user(s).

Summary

No-Code AI Makers is the best of all worlds because of transparency, user control, and potential for customization. With a la carte pricing, innovative chunking options, and integration capabilities, every business and individual should turn to No-Code AI Makers for their AI chatbot needs. From customer service inquiries to educational non-answering to in-house documentation needs, this is the ultimate AI Maker solution that creates an effective chatbot.

BEYOND CLASSICAL: REWRITING THE RULES OF ARTIFICIAL INTELLIGENCE

PRANAB RAI
3MCA A

Quantum machine learning is a fast emerging field at the intersection of quantum computing and artificial intelligence. This is a discipline promising an incredible pace, efficiency, and scalability for computational complexities. QML provides computational advantages over classical machine learning methods by exploiting quantum principles such as superposition, entanglement, and interference.

1. The Role of Quantum Computing in Machine Learning

Quantum computing offers computational models that transform machine learning models data processing fundamentally. Unlike traditional computers, which process data on binary digits written as 0s and 1s, quantum computers process data on quantum bits known as qubits. Qubits are in a superposition state. This feature enables quantum computers to process many calculations at the same time, hence greatly enhancing the efficiency of data processing and decision-making.

Key quantum computing concepts applied in QML are:

Quantum Fourier Transform (QFT) is a fundamental quantum encoding technique through which classical information is transformed into quantum states and hence data transformation and manipulation becomes efficient.

Quantum Neural Networks (QNNs): Quantum aided neural networks with better generalization ability, especially in the case of sparse or high-dimensional data.
Quantum Support Vector Machines (QSVMs) are a quantum version of classical Support Vector Machines (SVMs) and have very low computational complexity with respect to classification problems.
Grover's Algorithm: a quantum search algorithm for unstructured databases that has a quadratic speedup over classical search, and is capable of potentially beating classical algorithms in big-data scenarios.
Through the application of these principles, QML enables computational efficiencies that revolutionize the field of machine learning.

2. Quantum vs. Classical Performance in Key Applications

AI has developed quantum algorithms to the extent that they have outsized scope to almost all fields, more particularly optimization, cryptography, and data analysis.

QML improvements have also proven computation efficiency over conventional methods in a lot of applications. Of these, optimization stands out as most impactful whereby quantum algorithms like the Quantum Approximate Optimization Algorithm (QAOA) have shown amazing changes in processing time. For complex optimization problems, traditional methods take around 10,000 seconds for computing; however, QAOA could provide exact solutions within 1,000 seconds, 10 times more efficient. This is a huge breakthrough in stuff like logistics, finance, engineering, etc., as far as solving problems is concerned regarding timing.

There are paradigm shifts in quantum computing which had a revolutionary impact on cryptography, and now it stands with his "Shor's Algorithm" to factor very large numbers easily. A computation that takes here 1,000,000 seconds for traditional cryptographic methods can now be achieved in just 10,000 seconds at a speed-up factor of 100 with quantum algorithms. This paradigm-changing scenario will have profound consequences for information security because all the classical encryption techniques will soon become obsolete with the arrival of the quantum computer, leading towards the search for novel quantum-resistant cryptographic protocols.

Another area where QML has outperformed others is quantum chemistry, namely electronic structure calculations and molecular simulation. By quantum phase estimation, a quantum algorithm for very precise calculations, we find that complicated chemical computations are done in 50 seconds, as against around 500 seconds by classical computation.

The 10-fold acceleration significantly accelerates drug discovery, materials science and chemical engineering in simulating the molecular interactions to unprecedented accuracy.

Finally, Grover's Algorithm transformed information searching and database querying by offering a quadratic speedup over traditional search algorithms. On the other hand, one has traditional searching algorithms the work of which takes around 1,000 seconds to locate a piece of unstructured data, whereas Grover's Algorithm can accomplish such a task in just 32 seconds-that is a mere speedup factor of 32. This sort of efficiency is of monumental importance in applications such as big data analytics, AI, and search engine optimization, which seek instantaneous access to large amounts of information.

This advance in technology is sure going to change the way quantum computing works for all applications that require much computation, such as:

- Machine learning and artificial intelligence: Quantum-aided models significantly improve data processing at large scale, high-dimensional data sets.

- Cryptography and Security: Quantum algorithms shatter conventional encryption techniques providing secure cryptographic methods.
- Optimization Problems: Logistics, finance, and engineering applications are enhanced by quantum solutions that reduce computational complexity substantially.

These benchmarks shows the potential of quantum computing to redefine the efficiency of machine learning and optimization processes.

3. Quantum Machine Learning Applications Across Domains

QML is not just a conceptual construct. It has already shown practical advantages in many fields:

A. Quantum Chemistry and Materials Science

Quantum simulation can efficiently mimic the interactions between molecules and produce great breakthroughs in drug discovery, materials science, and modeling chemical reactions.

Research shows that quantum phase estimation performs much better than classical computational chemistry methods, allowing for electronic structure calculations with even greater efficacy.

B. Secure Computing and Cryptography

Due to the fact that eavesdropping is practically impossible, very secure QKD quantum cryptography protocols can maximize data security. With the help of entangled quantum information, secure channels can be implemented for robust cybersecurity protocols for both financial and governmental applications.

C. High-Dimensional Data Processing and AI

Techniques from quantum machine learning enable faster classification, clustering, and regression of large data sets that prove useful in finance, medicine, and social sciences. Enhancing the efficiency of feature extraction via quantum feature mapping subsequently gives rise to more accurate prediction in the context of machine learning. These applications illustrate the transformative power of quantum machine learning to solve some of the most important problems facing computing today.

4. Challenges that Prevent Mass Adoption of QML

In spite of numerous promising developments, QML has several very serious issues to be resolved before it can be generally commercially accepted:

A. Temporal Coherence and Hardware Constraints

Quantum states have a certain fragility, and the coherence time, i.e., the period for which quantum information remains stable, is intrinsically limited. This restriction heavily influences the reliability of quantum machine learning calculations.

Though helpful for experimentation, Noisy Intermediate-Scale Quantum (NISQ) machines have high error rates and short qubit coherence times, which limit the complexity of algorithms that can be executed reliably.

B. Bottlenecks in Data Encoding and Processing

The quantum encoding of classical information in an efficient way is a technically challenging and computationally demanding process.

Quantum Embeddings and Quantum Feature Maps are being created to enhance the encoding process. More research is needed to optimize these techniques.

C. Scalability and Algorithm Optimization

Quantum algorithms need accurate tuning, especially in hyperparameter optimization, minimization of circuit depth, and error mitigation strategies.

Classical-quantum hybrids arose as an interim solution for allowing quantum computation, which is useful while leaning on classical calculation for other jobs.

These issues must be resolved for QML to be applied practically to real-world applications.

5. The Evolution of Hybrid Quantum-Classical Models

To overcome current hardware constraints, hybrid approaches interleave classical and quantum computing approaches, taking advantage of the strength of each approach.

A. Hybrid Frameworks in QML

The Variational Quantum Eigensolver (VQE) applies quantum circuits to execute complex computations, simultaneously integrating classical optimization techniques.

Quantum Approximate Optimization Algorithm (QAOA): Enhances problem-solving in combinatorial optimization problems, much better than conventional methods.

The hybrid neuro-classical networks combine quantum-inspired feature extraction techniques with classical deep learning models to augment model training time and improve generalization capacity.

B. Security Benefits of Hybrid Models

Quantum Feature Mapping strengthens data protection in machine learning systems by mapping data into quantum-secure feature spaces.

Distributed Quantum Machine Learning enables secure multi-party computations on connected quantum processors, which renders confidential datasets safe.

These hybrid offerings offer a working bridge to full quantum deployment, making sure that quantum computing will be able to provide value even before scalable quantum hardware is on the market.

6. Future Directions in Quantum Machine Learning

While certain aspects of the future research directions of QML will be determined by specific new developments:

Quantum Hardware Breakthroughs: The growing advancement in the field of coherence time, error corrections, and stabilization techniques will yield far-reaching results in opening up a number of large-scale quantum computations.

What becomes of this is augmented hardware in an NISQ development toward fault-tolerance quantum computing, which will be necessary to deliver configured, complex, scalable QML systems.

Advanced Quantum Algorithms: Future improvements will lead to greater depths in circuits, error tolerance in algorithms, and the minimization of resource overhead in quantum-assisted models.

Possible new frontiers in AI will be opened up by quantum-enhanced reinforcement learning and generative models.

This will be something for the future and from one other point: certain other aspects of future research directions of QML will be determined by specific new developments:

Quantum Hardware Developments: Progress against qubit decoherence time, error correction and stability should be attributable to the large-scale quantum computation architecture in the future.

Toward complex and scalable QML systems, evolved hardware from the NISQ paradigm into fault-tolerant quantum computing will be instrumental.

Advanced Quantum Algorithms: It will expect future improvements with great depths in circuits with error tolerance in algorithms and the optimization of resource overhead in quantum-assisted models.

Possible New AI Frontiers were opened by quantum-enhanced reinforcement learning as well as generative models.

Some more will really be set for the future and from one other point: certain other aspects of future research directions of QML will be determined by specific new developments:

Breakthroughs in Quantum Hardware: Accomplishments with respect to qubit decoherence time, error correction, and stability should take large-scale quantum computation architecture anywhere in the future.

Toward complex and scalable QML systems, evolved hardware from the NISQ paradigm into fault-tolerant quantum computing will be instrumental.

Advanced Quantum Algorithms: It's expected that future improvements will lead to great depths in circuits, have error tolerance in algorithms, and minimize resource overhead in quantum-assisted models.

New frontrunner in AI set aside by quantum enhancement with reinforcement learning and generative models.

Interdisciplinary Applications: QML will probably change such fields as climate modeling, financial forecasting, medical diagnosis, and robotics. Quantum-enabled predictive analytics will power the innovation within those sectors based on the handling of big data. Breaking through current limitations and building on hybrid approaches, QML will open the door to next-generation artificial intelligence, making computational power now out of reach.

Conclusion

Quantum Machine Learning is a paradigm in computing that has the potential to make a revolutionary difference in machine learning applications for the majority of the streams of the economy. Despite some of the current limitations, developments in quantum hardware, algorithmic advances, and the hybrid method are likely to bring the use of Quantum Machine Learning to the real world. With ongoing research, QML stands to revolutionize areas that mark high-dimensional processing of data, secure computation, and efficient optimization and thus revolutionize the future of artificial intelligence beyond imagination.

THE EVOLUTION OF GENERATIVE ADVERSARIAL NETWORKS (GANS) IN IMAGE PROCESSING

PRASHANTH SINGH
3MCA B

Artificial intelligence has seen radical development in the image processing field particularly in recent times. One such most disruptive technology is the development of Generative Adversarial Networks, a deep-learning framework that has radically changed how computers generate and edit images. Since the very beginning, GANs have ushered in a host of opportunities for medical imaging, creative design, and data augmentation, pointed toward the promise that the future of AI-driven visual applications will be.

Understanding GANs

In 2014, Ian Goodfellow and collaborators proposed GANs as a duel between two antagonistic neural networks: generator and discriminator. The generator generates synthesized images, while the discriminator evaluates their authenticity by classifying them into real and generated images. The adversarial process takes place iteratively through many rounds, so the generator gets better at creating realistic images with every further iteration of the process. This innovation has opened the door for many applications, such as style transfer and generation, super-resolution imaging, and realistic image synthesis. The two networks work together, producing images that often are realistically impossible for people to tell apart.

Transforming Image Processing

The most impressive area of the application of GANs is image enhancement. If conventional image processing methodologies have, till now, surely depended upon filter-based and feature-extraction-based techniques, then GANs visualize model capacity and create dastardly-good images based on their target. Super-resolution GANs augment low-resolution images without sufficient ablation of minute details for medical diagnostics and satellite imagery. Another breakthrough is GANs' data augmentation scheme. To train properly, many machine learning models need vast datasets. GANs address this caveat by generating very realistic synthetic images that expand datasets in order to improve model performance. This technique is proving especially useful in the fields of autonomous driving and medical imaging, where obtaining large quantities of labeled data can be quite difficult.

Challenges and Ethical Considerations

Though quite capable, GANs have many challenges. One major problem is the mode collapse: the generator produces limited variations of images, such that they look pretty similar to each other rather than diverse. Researchers are working hard to make those processes better in order to deal with this issue. The use of deepfake GANs has created serious ethical questions. With the capability to create life-like yet phony pictures and movies, questions begin surfacing about misinformation and digital privacy. Working towards meeting such challenges will include development of good detection algorithms and policies for effective ethical AI governance that will stand for responsible use.

The Future of GANs in Image Processing

The future tone of GANs is expected to be encouraging because there would be ongoing enhancements along with increased efficiency and reliability. Researchers are generating hybrid models that integrate GANs with reinforcement learning and other AI techniques to increase the already sophisticated image generation techniques. Recent innovations into conditional GANs allow for directed synthesis of images with potential application in personalized healthcare and intelligent design.Furthermore, it is this technology-leading existence of GANs at the very cutting edge that generates these interesting, often very complex questions. While GANs are certainly enablers of technological development-through new levels of image generation, enhancement, and modification-as AI continues to unfold, they invite philosophic discussions about the intersection of AI and human creativity. As research and discussions pertaining to their policies continue, GANs are programmed to change the whole paradigm of visual computing in the next decades to come.

HAPPY CLASSROOM! POSSIBLE ?? THE KEY TO MEANINGFUL LEARNING

DR.HELEN K JOY

Imagine a classroom where students walk in with excitement, eager to learn, and leave feeling fulfilled. A space where learning feels less like a task and more like an adventure. This is what a happy classroom looks like—a place where students feel safe, engaged, and motivated.

A happy classroom isn't just about laughter and smiles; it's about creating an environment where students feel valued, heard, and encouraged to explore. The mindset of both faculty and students plays a crucial role in building this atmosphere. Trust, respect, and meaningful interactions form the foundation of an environment where learning is not just effective but also enjoyable.

The Role of Trust in a Happy Classroom

Trust is everything. Students need to feel comfortable expressing their thoughts, asking questions, and making mistakes without fear of judgment. When they trust their teacher, they engage more, take risks, and become active participants in their learning journey. Likewise, when teachers trust their students, it fosters a classroom dynamic that is open, collaborative, and inspiring. A culture of trust allows students to feel supported, which in turn helps them take ownership of their learning.

Teaching Methods That Make Learning Enjoyable

A truly happy classroom isn't just about delivering content—it's about bringing learning to life. When students and teachers are engaged, curious, and emotionally connected to their lessons, the classroom transforms into a space of excitement and discovery. Traditional lectures alone can't spark this enthusiasm, which is why incorporating interactive and experiential learning is essential.

Scribble and Learn encourages students to freely jot down ideas, helping them structure thoughts in their own way. This method fosters creativity, making learning more personal and memorable. Roleplay immerses students in real-world scenarios, strengthening their ability to think critically and empathize with different perspectives. Game-Based Learning adds an element of fun and friendly competition, turning lessons into enjoyable experiences rather than passive memorization.

But the real magic of a happy classroom lies beyond methods—it's in the unique energy each student and teacher brings. Every learner and teacher has their own "pixie dust"—a special spark of creativity, curiosity, and individuality. When given the right environment, this magic turns ordinary learning into something truly extraordinary. So, let's use it! Let's create classrooms where knowledge isn't just gained but experienced, where ideas flourish, and where everyone—students and teachers alike—feels empowered to shine

The Role of Students in a Happy Classroom

A happy classroom is a shared responsibility. While teachers play a major role in creating an engaging and supportive environment, students also have a role in maintaining harmony, respect, and discipline. Happiness in the classroom doesn't mean a lack of structure—it thrives on a balance of freedom and responsibility.

Students contribute to this environment by respecting boundaries, following basic etiquette, and maintaining a positive attitude. Simple actions such as listening actively, respecting classmates' opinions, participating meaningfully, and avoiding distractions go a long way in creating a space where everyone feels valued. Mutual respect between teachers and students fosters an atmosphere where learning is enjoyable and effective.

Moreover, students should understand that enthusiasm for learning does not mean disrupting the flow of a class. Maintaining decorum, allowing space for discussions, and valuing peer contributions enhance the overall experience for everyone. A happy classroom is not just about fun—it's about creating a respectful and inspiring learning community.

Beyond Engagement: Building Genuine Connections

A happy classroom isn't just about capturing students' attention—it's about sustaining their interest and forming meaningful connections. Each student learns differently, and understanding their individual needs makes all the difference. A good teacher doesn't just deliver content but also observes, listens, and adapts. By fostering an environment where students feel seen and supported, learning becomes more personal and impactful.

In my classes, I have seen how important it is to connect with students beyond academics. When they feel comfortable sharing their thoughts and ideas, their motivation to learn increases. Whether it's through discussions, feedback sessions, or informal interactions, forming a bond with students makes a huge difference in their enthusiasm and willingness to learn.

Attachment-Based Learning: Strengthening Teacher-Student Bonds

At its core, Attachment-Based Learning emphasizes the need for a strong yet balanced connection between educators and students. Learning isn't just about lessons—it's about the people who teach them. When teachers genuinely invest in their students' growth, it creates a ripple effect—students feel seen, valued, and motivated to push their limits.

However, the key lies in maintaining a fine balance. While emotional security fosters confidence, going beyond limits—becoming overly lenient or emotionally entangled—can blur boundaries and affect learning discipline. The right approach is to support, guide, and challenge students without making them overly dependent. Educators should create a space where students feel safe to express themselves, but also understand the importance of responsibility and resilience.

A truly happy classroom isn't just about warmth; it's about structured encouragement. Students should feel empowered to explore, make mistakes, and improve—without fearing failure, but also without escaping effort. It's a place where curiosity thrives, learning feels like a journey, and students develop both academic skills and emotional strength in a well-balanced, supportive environment. A happy classroom is the foundation of successful learning. When students feel safe, respected, and engaged, they naturally perform better. Happiness in education isn't a luxury—it's a necessity. By prioritizing trust, engagement, and connection, we can transform classrooms into spaces of joy, creativity, and meaningful learning.

At the same time, a happy classroom thrives on shared responsibility, where both teachers and students contribute to a positive learning environment. Respect, attentiveness, and a sense of responsibility help maintain the right balance between enjoyment and discipline.

EASELINE: A REAL-TIME GRIEVANCE REDRESSAL SYSTEM FOR ENHANCED STUDENT SUPPORT

RASHMITHA SEVI AND KAILAS NATH S

Introduction

Increased digitalization of student services has increased the need for quicker, transparent, and real-time grievance redressals. University grievance procedures are lengthy, transparent, and non-real-time. Easeline, a mobile application created for postgraduate Computer Science students at CHRIST University, is put forward to bridge these gaps. Built on Flutter for cross-platform compatibility and Firebase for real-time functionality, Easeline is a seamless, interactive grievance management system. Students can submit categorized grievances, upload geotagged images and documents, get real-time notifications, and avail of emergency broadcasting services through the application.

Weaknesses of Traditional Grievance Redressal Systems

Traditional grievance redressal systems are plagued by inefficiencies that render them ineffective. Software like "Knowledge Pro" that are utilized in universities lack proper grievance reporting feature with no option to categorize, real-time alert, or support documents. Software like the University Grants Commission's e-Samadhan also often have spasmodic response times due to their dependence on individual institutions. Other university arrangements like MIT World Peace University and Nirma University are also plagued by delay in grievance redressal within complex, multi-step frameworks of obstacle to decision-making. These limitations strengthen the imperatives of a more effective response and participatory system like Easeline.

Easeline: The Proposed System

Easeline is dedicated to providing a dynamic and feature-rich grievance management system with key features that eliminate the shortcomings of current systems. The site enables students to:

- File grievances under subject categories.
- Upload geotagged images and supporting documents.
- Immediate feedback and notification by staff and volunteer groups.
- Apply for attendance modification for valid reasons such as health emergencies.
- Post anonymously.
- Utilize an emergency broadcast facility for critical issues.

System Architecture

Easeline is developed on Flutter for cross-platform deployment and Firebase for real-time database management. Firebase Cloud Messaging is used on the backend for real-time notification and Google Maps API for geolocation services. This makes the platform highly responsive and scalable, deployable to other departments and institutions.

Benefits of Easeline

Deployment of Easeline offers several advantages:

Enhanced Responsiveness: Real-time submission of complaints and response tracking enhance student support.

Categorized Grievance Management: Systematic categorization resolves issues better.

Transparency: Students are able to monitor the action taken on their grievances, making it accountable.

Emergency Support: Emergency matters receive high priority, making campus security more robust.

Anonymous Reporting: Students can report incidents anonymously without any reprisal.

Integration with Academic Systems: Being able to apply for attendance requested makes academic culture supportive.

User Interface and Functionality

Easeline's UI is designed on a modular basis, in a way that it is easy to use for the teaching faculty and the students:

Login Module: Firebase role-based authentication.

Grievance Submission Module: Grievances were filed in the form of geotagged images and supporting documents by the students.

Resolution Dashboard: Grievances and replies can be viewed and acknowledged in real-time by the volunteers and the teaching faculty.

Announcements Module: The teachers can make announcements of immediate notifications and emergency alerts.

Future Prospects

Besides grievance redressal, Easeline can become an overall support system for students. The future holds promise of features like detailed analysis of chronic issues, feedback forums for faculty and volunteers, as well as integration with larger student service systems. With each capability addition, Easeline will raise its own bar in student grievance management for schools and universities.

Conclusion

Easeline is a landmark in the evolution of student grievance redressal systems. With simplicity and real-time technology, it accelerates issue resolution, introduces transparency, and makes the academic environment more empathetic. While schools are embarking on the journey of digitalization, Easeline is pioneering technology use in student support services, and the overall student experience is enhanced.

FROM CALLS TO CAMERA TRAPS: HOW MULTIMODAL ML IS REVOLUTIONIZING WILDLIFE CONSERVATION

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Multimodality—possibly a word you know well, or perhaps not. Prior to its exciting applications, let's spend a minute deciphering what it actually refers to. Daily, huge volumes of data stream over the internet, arriving in numerous formats—images, videos, audio, and text. Each of these types is distinct and provides insight independently, but the effect is much greater when these multiple data types are aggregated. Multimodal Machine Learning takes advantage of these multimodal data types—images, video, audio, and text—and combines them to produce more meaningful insights than any one data source individually. The aim of multimodal machine learning is to increase machine intelligence, allowing systems to perceive, understand, and reason in a manner that reflects human cognition. By combining various data sources, machines can develop a more human-like and richer understanding of the world.

Principles:
One of the fundamental concepts of this multimodal approach is the heterogeneity of modalities.In wildlife research, we can use an abundance of different data types, ranging from images obtained through camera traps to recordings of animal calls and GPS coordinates. Each of the different modalities offers a unique perspective: images reveal visual attributes and behaviors of species, audio data provides hints at their calls and interactions, whereas GPS data monitors their movement patterns and use of habitat. Combining these different sources of information, scientists are able to create a much richer description of animal behavior and environmental interactions. For example, tracking visual data against GPS data enables researchers to observe not only where animals travel but also how they move around their habitats, revealing their requirements and difficulties. In addition, modalities are interconnected, having similarity factors that further suggest more about wildlife.

The ability of these types of data to interlink makes it possible for researchers to refer back to findings and realize more profound aspects. For instance, analyzing visual data obtained from camera traps with GPS data makes it feasible to comprehend the ways in which various species utilize their habitats during different times of the day. Likewise, aligning audio records with visual sightings can provide insight into animal behavioral patterns and migratory patterns.

This network of associations makes it possible for researchers to investigate ecological relationships in ways previously unknown, ultimately leading to improved conservation policies. By acknowledging the connections between modalities, we can emphasize how species are adapted to their environments and the ecological processes involved. Most compelling is perhaps the notion that modalities interact to produce new information that can have a strong influence on task inference.

When multiple sources of data are integrated, they can give rise to insights that no one source could yield in isolation. For instance, take the possibilities of merging visual data from camera traps with behavioral data inferred from audio recordings. Merging these two allows researchers to create predictive models that estimate species behavior in different environmental conditions. Information such as this is priceless in determining key habitats and knowing when and where species are most active, allowing conservationists to target their efforts efficiently. Moreover, machine learning models with multiple modalities can be used to improve the accuracy of species identification and give a better estimate of population health overall, eventually enabling us to track the impact of environmental changes more effectively.

TRACKYY: REVOLUTIONIZING PERSONAL FINANCE MANAGEMENT

TOJIN VARKEY SIMSON AND JAIBY MARIYA JOSEPH
3MCA B

Trackyy is an innovative personal finance management application designed to simplify expense tracking and financial planning. Developed by Tojin Varkey Simson (2447253 MCAB-B) and Jaiby Mariya Joseph (2447221 MCAB-B), Trackyy transforms financial management into an intuitive and insightful experience, making it accessible to everyone.

Core Concept and Vision

Trackyy is built on the belief that financial awareness fosters financial freedom. The app serves as a personal finance companion, enabling users to visualize spending patterns, identify saving opportunities, and make informed decisions. Unlike conventional finance apps that overwhelm with complexity, Trackyy prioritizes user experience, making financial management seamless for users of all financial literacy levels.

Technical Architecture

Trackyy follows modern Android development principles and employs the MVVM (Model-View-ViewModel) architecture for maintainability and scalability. It leverages Kotlin for its expressive syntax and safety features, while Room Persistence Library ensures robust local data storage.

The architectural components include:

- Activities & Fragments – Handle UI and navigation.
- ViewModels – Manage UI-related data and business logic.
- Repositories – Provide a clean API for data operations.
- Room Database – Enables efficient local data persistence.
- Adapters – Facilitate structured data display.
- Utility Classes – Offer reusable functions across the app.
-

Material Design 3 elements ensure a visually cohesive experience, while MPAndroidChart powers interactive data visualizations, making financial insights more digestible.

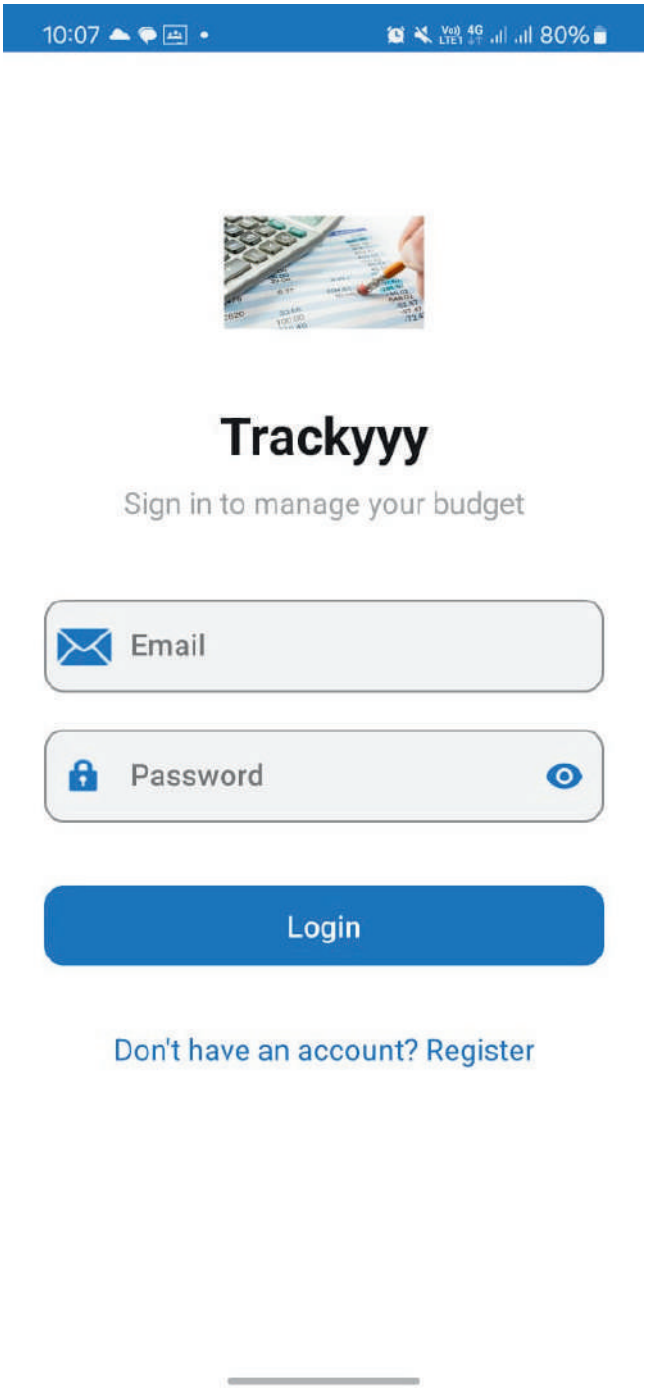
Key Features

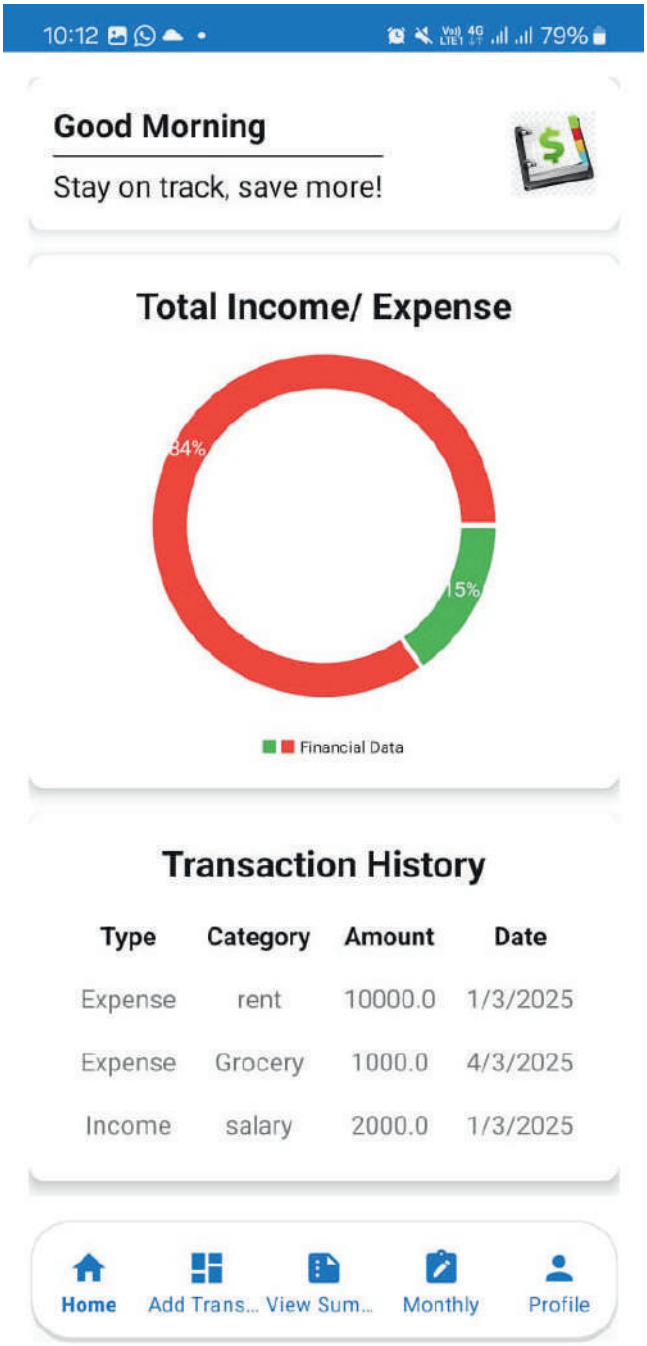
- Smart Expense Tracking – Automated categorization simplifies transaction logging, learning from user behavior to enhance efficiency.
- Dynamic Visualizations – Interactive charts transform numbers into insightful visuals, helping users analyze spending trends effortlessly.

- Comprehensive Reports – Exportable PDF reports provide structured financial summaries for monthly and yearly analysis.
- Customizable Themes – Light and dark modes enhance usability for different environments and preferences.
- Offline Functionality – Core features work without an internet connection, allowing seamless financial management anytime, anywhere.

User-Centric Design

Trackyy prioritizes reducing cognitive load while maximizing usability. The interface employs intuitive gestures, easy navigation, and contextual guidance to ensure a seamless experience. Accessibility features, including screen reader compatibility and adjustable text sizes, make the app inclusive for users with diverse needs.





Security and Privacy
Financial data security is a top priority. Trackyy encrypts all sensitive data on-device using industry-standard protocols, ensuring privacy. The app operates primarily offline, minimizing data exposure.

Future Enhancements
Trackyy's roadmap includes:

- AI-powered spending analysis & budget recommendations
- Cloud synchronization for multi-device access
- Receipt scanning for automatic expense entry
- Financial goal tracking with milestone celebrations
- Banking API integration for real-time transaction updates

Target Audience
Designed for a broad user base, Trackyy serves students managing budgets, professionals tracking expenses, and meticulous planners seeking in-depth financial insights.

Technical Requirements
Trackyy requires **Android 7.0 (Nougat) or higher**, occupies approximately **50MB of storage**, and runs on most modern Android devices. Developers can optimize performance using **Android Studio Arctic Fox or later**.

Conclusion
Trackyy redefines financial management, turning it from a stressful chore into an empowering habit that promotes better money practices and financial well-being.

ARTIFICIAL INTELLIGENCE-POWERED WASTE SEGREGATION AND CLASSIFICATION AS PER IMAGE IDENTIFICATION

KOLI ASHVITA ASHOK AND SHIVANGI AGARWAL
3MCA B

Waste management has long been a constant problem worldwide, and inefficiencies in segregation have become environmental challenges. Traditional processes of waste disposal rely heavily on manual sorting, which is both inefficient and error-prone. Insufficient knowledge of the correct methods of segregation adds to the problem, and recyclable waste becomes contaminated and is added together with unnecessary mass in landfills. In the last few years, artificial intelligence (AI) has been increasingly viewed as a potential solution to automate and enhance waste sorting and disposal.
EcoSort is an application that seeks to solve the problem through AI-based image recognition for sorting and disposal guidance. The application is designed with FlutterFlow for simplicity of use, and Firebase for storing data and real-time processing as the backend. By integrating Google's Gemini API, EcoSort provides an easy, real-time waste classification system that maximizes the efficiency of waste segregation significantly. The technical design, deployment, and impact of EcoSort on modern waste management are discussed in this article.
EcoSort: AI-Based Waste Classification System

EcoSort is built with the overall aim of simplifying waste segregation at the community and household levels. The app employs AI to read images of waste items and tag them as recyclable, compostable, or non-recyclable. In addition to tagging, the app offers disposal recommendations based on India's waste management policy.

The core components of EcoSort are:
1. Image Classification and Processing: The user either uploads or takes a picture of the waste, which is processed using Google's Gemini API. The AI identifies the material makeup and classifies the waste according to it.
2. Cloud-Based Database: Firebase is used as the backend, taking care of user authentication, waste classification history, and tracking user activity.
3. Scoring System: Citizens are encouraged to properly sort waste using a scoring system that provides points for proper disposal and fines for incorrect sorting.
4. User Awareness and Engagement: The application features educational blogs and social interaction functions to promote proper waste disposal behavior.

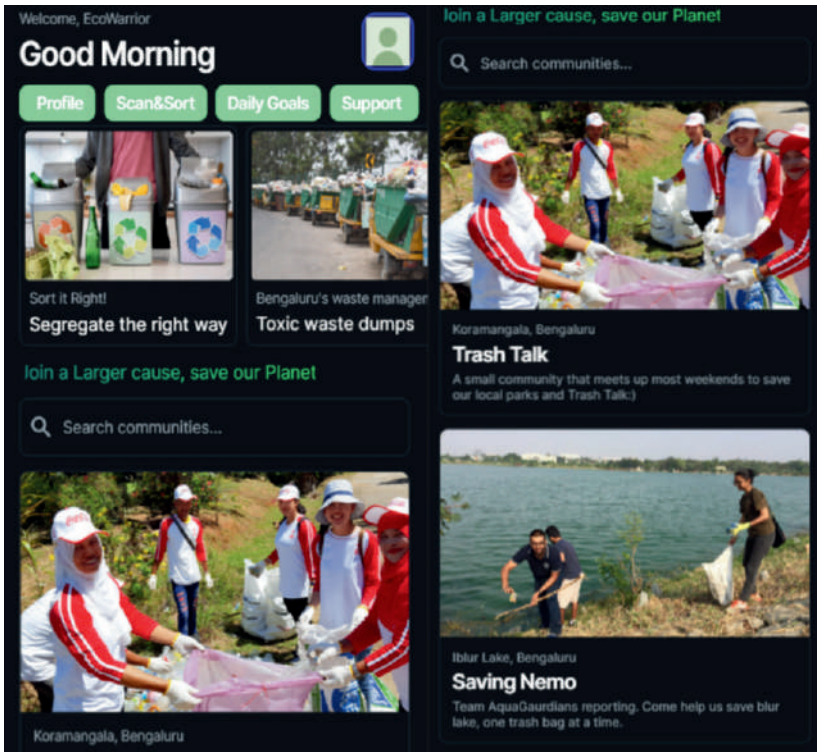
Technical Deployment

EcoSort's architecture combines numerous contemporary technologies to provide performance and scalability. The most important technological elements of the application are:

- Frontend Development: Built using FlutterFlow, ensuring an interactive and responsive mobile app user interface.
- AI-Based Image Recognition: Google's Gemini API enables real-time waste identification for enhanced accuracy in separation.
- Backend and Data Storage: Firebase ensures safe storage of data, authentication, and real-time tracking of waste disposal activity.
- Scoring and Feedback System: Users are provided with real-time feedback regarding their waste segregation efficiency, encouraging better disposal behavior.

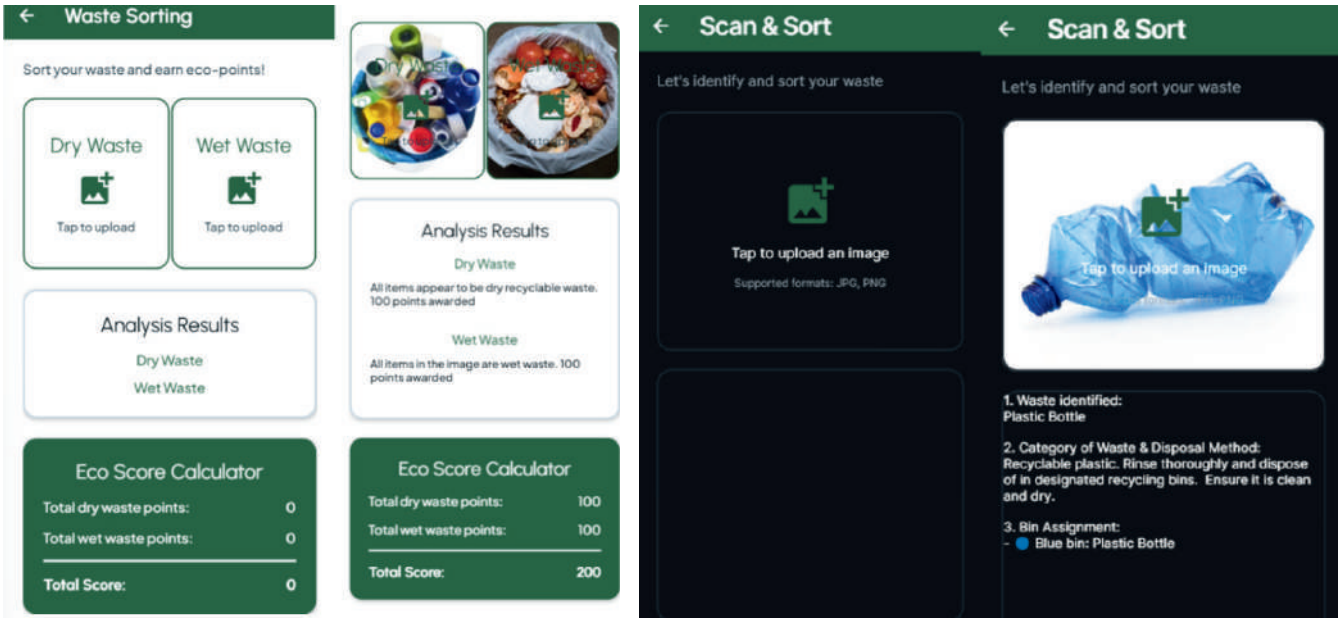
Results and Performance Measurement

The performance of EcoSort was tested in various real-life scenarios to determine its classification rate and user engagement. The application successfully identified and classified a wide range of wastes with high accuracy.



Key Findings:

- Good Classification Rate: The AI model demonstrated over 90% accuracy in identifying waste materials and suggesting proper waste disposal.
- User Engagement and Participation: The community outreach and blog components experienced increased user participation in sustainable waste management practices.
- Reduction of Misclassification: Users reported significant decreases in their waste disposal behavior, leading to less contamination of recyclables.
- Scalability and Performance: Firebase's cloud infrastructure enabled smooth performance with real-time updates and efficient data processing.



Challenges and Future Improvements

Although EcoSort has been an immense success, there are some issues that still need to be worked upon to enhance it further:

1. Dataset Generalization: The AI models need large and varied datasets to enhance classification accuracy on different regions and types of wastes.
2. Real-Time Processing Limitations: Handling multiple image uploads in one go may cause lag, so backend services need to be optimized further.
3. Region-Specific Waste Regulations: The app is currently compatible with Indian waste regulations, but implementing elsewhere requires local dataset training.
4. Lighting and Object Occlusion Issues: Lighting conditions such as poor lighting or occluded objects can affect accuracy.

To address these concerns, future work will focus on:

- Improved AI Model Accuracy: Diversifying datasets and refining classification techniques to raise accuracy in varying conditions.
- IoT Device Integration: IoT-connected intelligent waste bins can further automate the segregation and disposal process.
- Collaboration with Government and Municipalities: Coordination with municipalities to integrate EcoSort into municipal waste management systems.
- Multi-Language Capability: Adding support for more languages to make EcoSort accessible to more people.

Conclusion

EcoSort is a significant achievement in applying AI for green waste disposal. By automated waste classification and disposal recommendation, the app promotes right disposal habits, reduces wastage in landfills, and optimizes recycling rates. Google's Gemini API coupled with a robust cloud-based backend enables scalability and real-time processing, and EcoSort becomes a reliable solution to the waste management needs of today's times.

With additional innovation, EcoSort can revolutionize waste sorting at the individual and municipal level. With enhanced functionality solving existing problems, and extended functions, the app can contribute its share towards a greener, cleaner future. AI-based waste management apps such as EcoSort provide the vision for a cleaner, greener future through minimizing waste contamination and enhancing recycling processes.

THE EVOLUTION OF OCR: FROM BARCODE SCANNERS TO AI-POWERED TEXT RECOGNITION

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Most people experienced their first encounter with machine reading while visiting the supermarket checkout counter. The invention of barcode scanners changed the billing process because machines could instantly identify and extract information from printed codes. Machines initially exhibited their capability to detect symbols and transform them into useful information at one of their earliest development points.

After barcode scanners were made available for purchase, the market expanded further. OCR technology produced a real breakthrough by enabling computers to identify and handle printed and handwritten words. OCR serves multiple purposes today beyond traditional document and receipt scanning through its role in advanced applications, including AI processors of documents with automated handwriting recognition and automated translation systems.

The First Steps in OCR

Barcodes were the earliest attempt at machine-readable text. Encoding information in a structured pattern of black-and-white lines allowed computers to identify products quickly. However, as businesses needed to store more information in compact spaces, QR codes (Quick Response codes) became the next step in evolution.

Unlike barcodes, QR codes store much more data, including alphanumeric text, URLs, and even entire datasets. Their applications include contactless payments (Google Pay, UPI), authentication systems, digital marketing, and event ticketing. QR codes demonstrated that machines could recognize more than pre-defined symbols, paving the way for OCR systems that could process real-world text.

The Rise of OCR

The ability of OCR technology exceeded barcode and QR code capabilities by allowing computers to interpret unstructured printed or handwritten text. At their initial stage, OCR systems applied rules to compare pixelated shapes against pre-established shape databases. The systems encountered difficulties processing fonts alongside handwriting and different image quality levels.

The most significant advancement in OCR technology involved machine learning methods because these systems could learn from extensive databases to steadily increase their ability to identify scanned texts. The technological advancements of Google, Microsoft, Adobe, and other companies have delivered advanced OCR engines capable of reading diverse language types together with handwritten content and mathematical expressions.

From Barcodes to AI-Driven OCR

OCR has come a long way, from simple barcode scanners to AI-powered text recognition systems capable of reading and understanding documents, handwritten notes, and real-world signs. As deep learning and computer vision evolve, OCR will play an even more significant role in automation, accessibility, security, and real-time information retrieval.

Whether it's a QR code payment, smart note-taking, AI-driven document processing, or real-time language translation, OCR is silently powering some of the most essential digital experiences of our time.

The next time you scan a QR code or translate text with Google Lens, remember that you are witnessing decades of technological evolution that began with a simple barcode reader at a supermarket.

LADY ADA LOVELACE: THE FIRST COMPUTER PROGRAMMER

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3MCA A

Presently, the term "programmer" does not sound as alien because more and more individuals choose to study in the realm of computer science and of whom many become programmers. But are you aware who the first Computer Programmer was?

Augusta Ada King, Countess of Lovelace was born on 10th December 1815. She was the daughter of renowned romantic poet Lord Byron and Annabella Milbanke Byron. She is regarded to be the World's First Programmer. Her life started on an unpleasant note because the union between her parents didn't last long as Annabelle parted ways with Lord Byron just a few weeks after Ada's birth, and then Lord Byron departed England and Ada never encountered her father at all. To guide Ada away from acquiring the "volatile poetic madness" of her father Lord Byron, Annabella focused on music, French, science and mathematics in her daughter's education. The latter subject of mathematics in particular interested Ada and hence started her path to becoming significantly the world's first programmer.

Having endured much hardship in her teen years, Ada was eventually presented at court (as was the practice of her class at that time, to introduce a woman of age into society in the hopes of gaining her a marriage). In her season she danced and bewitched the assorted visitors with her sharp intellect.

At 17 years old on the 5th of June 1833, Ada encountered a character who we now know as the "Father of the Computer", English mathematician: Charles Babbage. Babbage became friends with Ada and also a mentor to her and she became his protégée. Ada was enthralled by Babbage's thoughts. Babbage designed the Difference Engine which was revolutionary. It was intended to do the mathematical computation in terms of pure addition by partitioning the problem into smaller and smaller fragments termed the method of finite differences on which it would then spit out the values onto a table. Ada had a glimpse of the machine before completion. She was fascinated by it.

Babbage also designed schematics for another machine that would be called the analytical engine to do more complicated calculations (which however, never existed). Babbage was invited in 1840 to deliver a lecture at the University of Turin on his Analytical Engine. Luigi Menabrea, a young Italian engineer and future Prime Minister of Italy, had Babbage's lecture copied into French, and this was later published in the Bibliothèque universelle de Genève in October 1842. Babbage's friend Charles Wheatstone commissioned Ada Lovelace to translate Menabrea's paper into English. She then added notes to the paper, which were appended to the translation. Ada Lovelace spent most of a year accomplishing this, with Babbage's input. These notes, a longer version than Menabrea's article, were later published in the September 1843 issue of Taylor's Scientific Memoirs under the initials AAL.

Ada Lovelace's notes were lettered alphabetically from A to G. She also contributed thousands of words of her own notes to the article. Lovelace understood the appeal of the Analytical Engine to perform a long series of mathematical calculations. In note G, the sample she described of such a

series—how to compute Bernoulli numbers—is considered the first computer program by historians of computers. She even hypothesized that the Analytical Engine might be employed to operate upon "other things besides numbers," like music notes. In addition to numbers, Ada also explained the way codes would be made for the machine so that it was able to use letters and symbols. She even hypothesized a way the engine would be able to repeat sets of instructions or "looping" – a process computer software continues to do today. Ada also presented other ideas in her paper including her ideas on Artificial Intelligence. It is regarded as the first algorithm published ever to be specifically designed for running on a computer, and Ada Lovelace has frequently been referred to as the first computer programmer because of it. The engine itself was never finished so her program was never run because Babbage fought with politicians for his machines and he was unable to obtain the money from Parliament following the collapse of his government-funded Difference Engine since he lost an amount of money which at that time equated to two royal navy warships. Ada had a strategy to work on the working of the Analytical Engine independently and Babbage would assist only in its construction, but he did not want to relinquish control and rejected all her demands.

Ada married William King on 8th July 1835 and had children Byron (born in 1836), Anne Isabella (known as Annabella, born in 1837), and Ralph Gordon (born in 1839). Her husband became the Earl of Lovelace in 1838, which made Ada a Countess of Lovelace.

In the 1840s, scandals, rumors, gambling, and lost bets resulted in her organizing a syndicate of male friends and a bold attempt in 1851 to construct a mathematical simulation (most likely the Analytical Engine) for winning big bets. This ended in catastrophe, with her owing thousands of pounds to the syndicate, which she had to confess to her husband. She then had to pawn some of her family jewels to pay off her debts. Ada fell ill seriously in 1852 and went to bed and died slowly and painfully due to cancer on November 27th 1852 aged 36. Her last request was a rebellious act against her mother and she wished to be buried beside her father whom she never knew.

Ada was removed miles from home and was buried in the Byron Family Tomb within the church of St. Mary Magdalene in the tiny English town of Hucknall. It was in 1953, over a century since her death, that Ada Lovelace's writings on Babbage's Analytical Engine were published once again as an appendix to B. V. Bowden's Faster than Thought: A Symposium on Digital Computing Machines. The engine is now acknowledged as a prototype computer and her writings as an account of a computer and software.

In the 1970s, the US Department of Defense created a high-order computer programming language to replace the hundreds of various ones in use by the military at that time. The programming language was called "Ada".

Today an international celebration is held on the second Tuesday in October – Ada Lovelace Day, celebrating the work of women in science, technology, engineering, and mathematics (STEM).
Nonetheless, there remain numerous controversies regarding whether Ada would or not be dubbed "The First Computer Programmer".

THE GREAT CARTOON WARS: THE PSYCHOLOGY OF CARTOONS ACROSS GENERATIONS

SHIVANGI AGARWAL
3MCA B

Once upon a time, before kids had phones glued to their hands and before watching a 10-second clip on repeat was considered entertainment, cartoons were a defining childhood experience. They weren't just moving pictures; they were cultural landmarks, shaping humor, fears, friendships, and the very fabric of childhood imagination. But, much like humanity itself, cartoons evolved—or mutated, depending on your perspective.

Millennial cartoons were profound, frequently pointlessly complicated in their plotting, and with an unshakeable belief in the capacity of kids to handle real stakes. Then there was Gen Z's surrealism where sanity was abandoned at the door, and humor was lost in a navel-gazing maelstrom of irony. And today's kids? They exist in an electronic daze of quick content scanning, cartoons engineered to keep their eyeballs pinned like their retinas would get up and walk away if they had half a second to think.

Millennials were raised on cartoons that made them feel like they were watching mini-epic sagas.

Batman: The Animated Series gave us noir-esque storytelling so involved it felt like a crime drama for adults. Avatar: The Last Airbender had a three-season arc that ended in a finale of masterful proportion- character growth, moral dilemmas, trauma, and all. Even Courage the Cowardly Dog thought it was perfectly fine to present children with nightmare fuel like King Ramses' Curse and just let them deal with it. Meanwhile, Gen Z, who grew up during the golden dawn of the internet era, saw the creation of cartoons that were completely off the rails. Why?

Chuck it. Consistency? Pfft, overrated. Welcome to Adventure Time, where a post-apocalyptic wasteland is colored in rainbow shades, and Regular Show, where two slackers fight cosmic deities in between shifts at a park job. The Amazing World of Gumball took it even further and became a living meme, stacking self-awareness so thick it was practically sentient. The kids who grew up on these shows developed an appreciation for chaos, absurdity, and inside jokes that only make sense if you've spent a decade on the internet. Fast forward to today's cartoons, and storytelling has become something of an afterthought. In an era where kids consume content in bite-sized chunks at speeds that make past generations dizzy, modern cartoons have adapted to keep up. Why worry about complicated storylines when you can cram the entire range of the visual spectrum onto the screen, never allow anybody to remain stationary, and crank up the energy to 300%?

On the other hand, Cocomelon hypnotizes toddlers with repetitive nursery rhymes that stick them like miniature juice-box-wielding zombies. Teen Titans Go! transformed a hit action franchise into a non-stop funhouse ride of pop-culture references, fourth-wall-breaking, and dance numbers that appear to have been approved by a board of overstimulated TikTok users. It's fascinating (and somewhat frightening) to see how cartoons have evolved with each generation's psyche. Millennials, who grew up in an era that still honored patience and long-form storytelling, could manage to sit through complex, layered narratives. Gen Z, the first true internet generation, learned to ingest humor at lightspeed and preferred their jokes weird, fast, and existential.

And kids these days? They've been raised on infinite scrolling, five-second dopamine hits, and the idea that if something isn't stimulating in the next three seconds, they'll just evaporate into thin air. That's not to say there are no exceptions. Bluey has defied the current trend by being a quiet, reflective, emotionally profound show that engages children and parents in equal measure. But it's an exception amidst a sea of content that is trying to be as loud, fast, and neon-colored as possible. So what does it all tell us? Cartoons don't just entertain- they're a product of their era. Millennials had shows that challenged them, Gen Z embraced the strange and meta, and the latest generation is watching the hyper-paced, visually frenetic evolution of kids' television. The only constant that we can count on is that cartoons will continue to evolve into whatever best captivates the minds (and short attention spans) of the next generation. And yet, at the heart of it all, regardless of whether it's a meticulously designed work of art or an ADHD fever dream, cartoons will always be an essential part of growing up- just delivered at increasingly ridiculous speeds.

S O C I O - S C A N

SHANTANU DAS
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Transforming Recruitment in the Digital Age

Today's networked society means social media is not just an instrument of self-expression per se—you could say it's a force that transforms professional domains. With business enterprises increasingly digitizing, everyone's question is how to assess potential on a level and equal platform based on social media profile. Socio-Scan is set to disrupt that with AI and machine learning bringing the recruitment process into transparency, equality, and efficiency.

Bridging the Digital Divide in Hiring

Traditional recruitment methods have depended for so long on resume screening, interviewing, and traditional background checking. With the advent of LinkedIn, Twitter, and Facebook, though, recruiters are sitting on a goldmine of unstructured data that ranges from professional accomplishments to hobbies to social habits. Although data of this sort is able to provide profound insight into the personality of an applicant and his or her likely cultural fit, it is also rife with dangers: possible invasion of privacy, subjective interpretations, and even unconscious biases that interfere with fairness and validity.

Socio-Scan is designed to meet all those pitfalls head on. Combining social media data and systematically processing it, it provides recruiters with a composite view of an applicant's social media footprint—and without exposing your business to the pitfalls of manual screening. With machine learning power behind it, the platform breaks through noise, uncovers revealing behaviour, and delivers actionable findings in plain, unbiased terms.

How Socio-Scan Works

Socio-Scan combines state-of-the-art-natural language processing technologies and data-analytics. Socio-Scan scans social media posts to pick up on patterns, emotional changes, and underlying currents that tell you a great deal about the person's work attitude and social skills. Since Socio-Scan is automated, the likelihood of biases on the part of humans is minimized, and candidates get evaluated on data-driven outcomes rather than judgment.

There is a strict framework to this test. Researchers applied a qualitative approach-analysing peer-review literature, business reports, and business case histories-to hone the algorithm. The thorough review was not only the technical foundation of the instrument, it also elicited the ethical steps involved in its application. The system is designed to comply with privacy legislation painstakingly so that candidates' personal information is treated ethically; yet still providing recruiters with the relevant data required to make a decision.

Revolutionizing Recruitment Practices

For recruitment professionals and HR experts, Socio-Scan implications are huge. With automating the candidate analysis, the platform eliminates much time and energy required in scouring through huge volumes of social media data. This efficiency advantage is reflected in the ability of recruitment processes to be accelerated without any compromise on the depth or intensity of candidate analysis.

Thus, Socio-Scan is also a win-win scenario both for the recruiter and the candidate. Recruiters know what kind of online reputation each candidate has, and hence recruiters get to make better and wiser recruitment decisions. Candidates get to know what the employer has to say about his online reputation—a step towards a better and balanced communication within recruitment.

Challenges and Future Directions

Socio-Scan potential is huge but not without challenges. As social media systems are constantly changing and privacy law is changing, these systems need to be redesigned and adapted on a continuous basis. Future business fact: algorithmic bias reduction and operational transparency Further, we will be inspired to make existing research evolve to larger data sources (even the data sources of non-English speaking countries) and instrument calibration in other cultures and organization contexts.

Conclusion

Socio-Scan is a game-changer when it comes to recruitment. In so successfully bridging the divide between technological ingenuity and ethical recruitment practice, it provides a sound platform on which to apply social media intelligence to effective and just ends. With the online environment set to grow only further, tools like Socio-Scan will be central to creating a recruitment process not merely attuned to the marketplace of today but sensitive to the transparency and equity of tomorrow.

Through embracing this new e-recruitment age, businesses stand to enjoy a future where recruitment is just as dynamic and varied as the candidates being sought.

HLACHAIN

RIYA SEN AND PARICHOY NANDI
3MCA A

This project integrates the technology of blockchain with the system of bone marrow donation

Necessity For Using Bone Marrow Donation System integrated with Blockchain:
Life-threatening blood disorders such as leukemia and lymphoma can be treated using bone marrow donation. The traditional bone marrow donation sector faces various challenges, such as fraud, safety risks, and a lack of transparency in donor and recipient matching processes. To address the challenges above, we provide HLAChain, A platform that will provide bone marrow donation - security, trust, and efficiency.

Technologies used in HLAChain:
HLAChain is constructed to secure and streamline the bone marrow donation process, offering a seamless platform that integrates Blockchain and employs web development technologies.

1. Web Page: Node.js
   - Front-end as well as the back-end of HLAChain's web application is designed with Node.js
   - Platform offers a convenient user interface for recipients and donors for easy admission and service.

2. Blockchain Infrastructure: Ganache & Ledger
   - Ganache, an Ethereum-based blockchain, is used in testing and simulating exchanges between smart contracts before deployment.
   - Ledger provides the underlying asset for the distributed network to store and authenticate transactions securely.

3. Decentralized Identity & Transactions: MetaMask (Web3.js)
   - MetaMask, a digital wallet and Blockchain app provider, makes a secure connection between users and the Blockchain.
   - Web3.js facilitates fluid and seamless interaction between the front-end application and the Ethereum based smart contracts.

4. Smart Contract Deployment: Truffle
   - Truffle is used to build, test, and deploy smart contracts to guarantee the stable performance of partially automatic donation contracts and donor-recipient matching verifiability.

Advantages of HLAChain:

Integrating blockchain technology to pair with bone marrow donation, HLAChain presents some fundamental advantages:

1. Improved Security: Distributed ledger technology allows donor information to be tamper-evident and resistant to cyber-attacks.
2. Trust & Transparency: Every transaction is stored on the blockchain, achieving complete transparency and reducing fraud risks.
3. Improved Matching: Smart contracts also match donors to recipients thereby reducing processing time and avoiding biased allocation
4. Intermediary Elimination: Blockchain shuts out third-party intermediaries, reducing costs and eradicating corrupt behavior.
5. Immutable Records: Recipient and donor information is unalterable; therefore, integrity and authenticity are ensured.
6. Global Accessibility in a Seamless Manner: Patients and donors can communicate with one another from any region across the globe, increasing access to life saving bone marrow transplantation.

Conclusion

HLAChain enhances security in traditional bone marrow donation. Blockchain technology eliminates immoral practices, optimizes matching between donors and recipients. Based on Node.js, Ganache, MetaMask, Web3.js, and Truffle, it offers a quick, reliable, and safe platform for lifesaving medical treatments.

THE ALLURE OF OPEN-WORLD RPGS: WHAT MAKES THEM SO POPULAR

SHIVANGI AGARWAL
3MCA B

Welcome to the realm of boundless wonders, where every step is an echo in the untouched wilderness of adventure. In the grand stage of open-world RPGs, you are a storyteller, a wayfarer amidst fantastical landscapes and endless marvels. So, fellow explorer, ready yourself for the enchantment that unfolds in this tapestry of boundless potential.

Unlike average games that give you a set character to work with, thrusting you down a linear path like an overenthusiastic tour guide, open-world RPGs allow you to explore far beyond the road to home. There is a map, sure but the wonder of an open world is not just to complete a task but to take that detour, run along the vast fields of wildflowers, tame an Owl- Bear, and learn how to fly. You must, because you can be as directionally challenged as your GPS on a bad day, and it's not just tolerated but encouraged.
It's like being a kid in a candy store, except the candy store is the size of a small country, and you're armed with a sword instead of a shopping basket. A surefire recipe for making every gaming session and uproarious adventure.

A common misconception is that every open world is an RPG. In hindsight, open-world games are quite literally the embodiment of our real world where you can go wherever, whenever, and interact with whoever. On the other hand, RPGs have a more distinct flavour. From controlling their character and decision-making to creating relationships with the people around them thereby adding layers and a much-needed personal touch. In The Witcher 3, Geralt is not just a monster-slayer; he is also a wine-loving, gwent playing, romantic superhero with fabulous hair, or how Baldur's Gate 3 allows a bard to take down an entire race of aliens and gods with the aid of a Pale white elf, God's favourite princess, and a wizard from Waterdeep

Upon release of Cyberpunk 2077 it was claimed to be bugged through and through. However, after some course corrections and many, many updates, the game was claimed to be one of the finest open-world RPG games out there.

In short, what sets these games apart is the repercussions of your choices – they're not fleeting, oh no, they come back to haunt you or honour you, reshaping the very fabric of the story's ending. Taking a page from the game Witcher 3, where they explored the concept of a 13–15-minute time wheel which acted as an amplifier to this synergy, assuring its success. The character is encountered with random events occurring like clockwork resulting in spontaneous decisions that come back to you as a consequence. This strategy ensures that players are not just passive observers but rather, active participants in the unfolding events, whether it be breaking one's heart or being responsible for someone's murder. You as a character start a chain of events that leave an everlasting mark upon the very world.

Perhaps one of the most detail-oriented game designs is making NPCs living, breathing, complicated creatures with intelligence and a story. They aren't just home décor to fill the screen but have their daily routines and quirky behaviours that make the world feel more alive. Whether you're eavesdropping on gossip, helping a robber, or accidentally setting their houses on fire (hey, it happens), the interactions with NPCs much like our real lives add a dash of unpredictability and hilarity to your virtual life.

While open-world games promise boundless exploration, players from around the world have reported that some fall prey to the pitfall of environments feeling lifeless, empty, random, and lacking meaningful stories. Games like Assassin's Creed Valhalla and AI generated Starfield environments, despite their vast landscapes, struggle to fill this void with "engaging content"

Regardless, most gamers would agree that the ability to design characters and tweak appearances and powers is half the appeal as it provides players with a unique sense of identity within the game. Witnessing the growth of their characters whilst also being able to mould their beings both in terms of skill and mindset adds an extra layer of attachment making the players emotionally invested in their journey.

In the world of gaming, the perfect marriage of open-world exploration and RPG storytelling is a journey an individual embarks upon wide-eyed and curious. Critically acclaimed titles like Red Dead Redemption 2, Baldur's Gate 3, The Witcher 3 : Wild Hunt, and Elder Scrolls V: Skyrim, serve as great examples, perhaps templates for a life of wonder and fantasy.

In the end, it is neither about how ginormous the map is, nor how sensational your abilities, but, being a part of a world that is as much a character in your story as you are a part of it's. Or, in the words of our favourite video-game dad "It Is The Nature Of A Thing That Matters, Not Its Form."

SENTIMENT AND EMOTION ANALYSIS: HUMAN EMOTIONS THROUGH DATA

GLORY REJI AND KUSUMA H K
3MCA A

Introduction

Sentiment and emotion analysis has actually evolved into a matured use of natural language processing and has become an independent business that intersects computer science, linguistics, and psychology. Sentiment analysis helps machines to discover, classify, and understand human feelings and emotions expressed in text, voice, facial expressions, and other behavior data.

Earlier, methods started with lexicon-based, which utilized word dictionaries that conveyed their affective meaning. Contemporary methods now use machine learning models that can identify more sophisticated patterns and apprehend deeper senses than words' emotions. Basic sentiment analysis texts into these general feelings: positive, negative and neutral

Sentiment analysis provides only a positive or negative indication of a sentiment, whereas emotional analysis assigns certain emotions such as joy, anger, fear, surprise, disgust, sadness and neutral.

This degree of detail enables businesses to learn more about their customers. They know when customers are not satisfied, but they can also determine if they're angry, frustrated, disappointed, or afraid—each state of mind may require a different response.

Technical Solutions and Strategies

There are a number of ways in which fuel drives current sentiment and emotion analysis systems:

1. Machine Learning Classification: Supervised models trained on datasets of text and their respective emotions.
2. Deep Learning: Neural networks, particularly transformers such as BERT and GPT, are learned from complex patterns of language and context-sensitive relations.
3. Rule-Based Systems: It applies rules of language and lists of words to detect emotions from specific words and phrases.
4. Hybrid Methods: Merging statistical methods with knowledge-based methods to obtain final improved accuracy.
5. Multimodal Analysis: The study of emotions in combination using text, speech, facial expression, and bodily expression.

Applications of sentiment and emotion analysis cross over to nearly every field:

1. Business and Marketing: Brand Monitoring, Customer feedback on product development, competitive market analysis.
2. Healthcare: Mental health treatment, emotion detection in autism treatment, etc.
3. Finance: Sentiment analysis in the investment market, emotional patterns to fraud detection, measuring customer satisfaction of financial services, Discovering the lending risks.
4. Politics and Public Policy: Measurements of public opinion on policies, Election campaign planning, Twitter and Facebook monitoring.

Limitations and Challenges

Despite enormous progress, analysis of feeling and emotion is restricted by some limitations. You know, computer programs simply do not understand sarcasm, irony, or cultural reference.

Subjectivity: Emotions are subjective, and various individuals will have various meanings for the same text.

Various Languages: Building systems that can function actually in languages with entirely appropriate grammar structures and cultural contexts.

Ethical Issues: Issues related to privacy, security, vulnerability to manipulation, and algorithmic discrimination.

Conclusion

Emotion and sentiment analysis is a key to make technology into more artificial and human-oriented. When we enable machines to understand human emotions, we're building systems that can actually respond to what human beings require in a more intelligent and effective manner. Each time we create new technology that enables AI to better comprehend human emotions, it contributes to a more harmonious human-computer interaction.

DIGITAL ADDICTION: SYMPTOMS AND SOLUTIONS

DR. BHUVANA JAYABALAN

Technology exists as an essential part in the modern digital world. People find endless entertainment and communication and learning opportunities through their digital devices ranging from social media to online gaming. Digital addiction emerges when people have an inability to control their screen exposure which creates negative impacts throughout their body and mind and social connections.

Symptoms of Digital Addiction

Different behavioral and psychological symptoms show up as signs of digital addiction:

- Long device usage past essential activities such as sleep time and study time along with physical exercise constitutes excessive screen time.

- The lack of access to phones, laptops and gaming consoles creates feelings of nervousness alongside agitation and irritation within users.
- Prolonged digital engagement forces people to drop important academic work tasks together with their personal responsibilities and responsibilities at work.

- People who choose virtual contact instead of human communication suffer from social withdrawal which triggers their separation from social connections.
- Sleep disturbances from blue light exposure during nighttime screen time can cause insomnia symptoms that produce fatigue as a consequence.
- The addiction causes people to lose their interest in traditional offline pastimes including sports and personal relationships with family members.

Solutions to Overcome Digital Addiction

Digital addiction requires both deliberate actions along with the development of self-control to avoid it. Here are some effective strategies:

Time limitations work through the combination of built-in screen time apps and individual usage restrictions.

Digital Detoxes involve designating periods sometime for digital screen abstinence so you can pursue offline tasks.

Devote dedicated time to spend with family members and friends in order to improve your close relationships.

Physical exercises that include outdoor sports and yoga act as the antidote to screen time through enhancing personal wellbeing.

Screen time practice requires you to monitor your screen activities because they serve two essential goals of productivity work and aimless scrolling.

The bedroom along with the dining table must remain free of digital devices as a way to establish healthier routines.

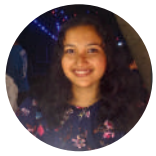
People should obtain professional guidance when digital addiction creates problems in their everyday activities.

Conclusion

People need to balance their usage of technology against maintaining regular contact with reality because technology serves a vital purpose in our current world. By understanding both behaviors and practicing self-control people can stop digital addiction which protects their productivity and their life fulfillment. Technology should be our growth tool not our dependence source thus we must use it wisely.

QUESTIONNAIRE BASED GAME DEVELOPEMENT

MARIAM AND MALAVIKA
3 MCA B



With the wide and diverse population of youngsters , estimates suggest that nearly 15% of the Indian population struggles with mental health issues .With the concern of lack of awareness in the current era , The Visual Novel Games aims to promote mental health awareness through interactive storytelling. In this world where mental health is generally ignored, our platform seeks to provide a platform for players to experience the emotional turmoil of different real life scenarios. The project combines mental health support with gaming interface, offering a unique blend of storytelling and reflection. With given studies that games can actually help in improving mental health, the game integrates a mental health questionnaire that drives the story line , encouraging the users to reflect and make significant choices as they progress in the game.

The Visual Novel Game is designed to provide an interactive, choice-based game that focuses on raising mental health awareness. The game has an adaptive storyline dependent on the user's responses in a mental health questionnaire that runs throughout the game. The system works to simulate emotional scenarios that people experience in reality, making the gamer reflect on the feelings, have thoughtful choices, and learn coping skills in a game.

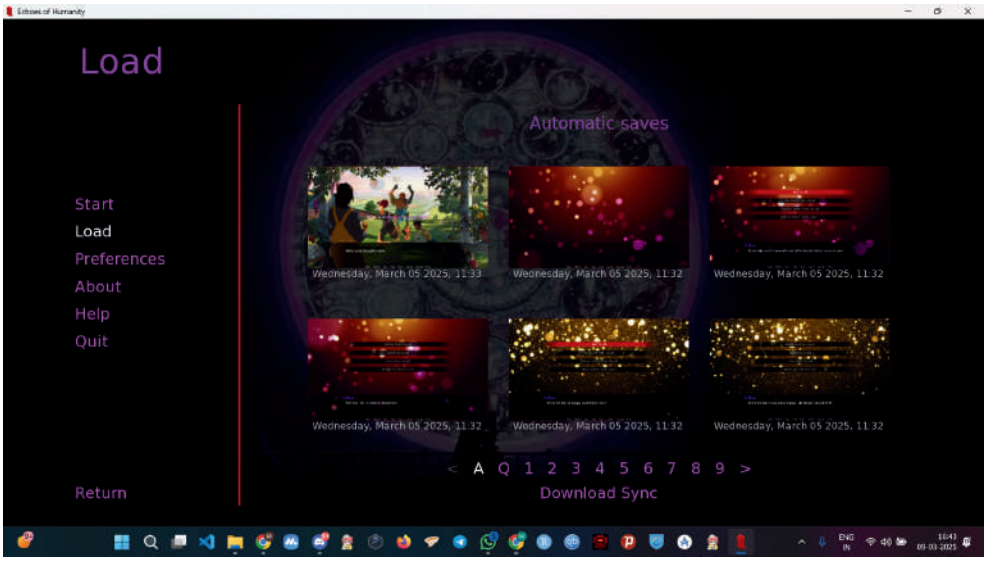
The core components of the system include:
Mental Health Questionnaire: The narrative is being driven by a tailored storyline based on the player’s responses.
Choice-based Gameplay: The game allows players to make decisions that impact the progression of the story, thereby promoting self-reflection and awareness of emotional states.
User Interface (UI): The System is designed to be simple yet engaging and user friendly, making it accessible for a wide audience.
Vent Box Feature: An in-game tool being provided which allows the players to express their thoughts and feelings anonymously, thereby providing a supportive space.
Mental Health Resources: The system promotes resources that encourage players to seek professional help and connect with support networks.

NEED FOR THE PROJECT

Given the studies of increase in mental health issues in youth being nearly 20% worldwide , it is to be noted that mental health issues like depression and anxiety have increased an ample amount specifically in the youth. Even Though current solutions like therapy apps, helplines, existing games , support groups and physical mental health helps exist , it can be seen that they lack the engagement and interaction.

Despite India's increasing literacy rates and economic growth 197.3 million people in 2017 experienced mental health problems, hence its a concern that people with mental health health problems suffer discrimination and exclusion . Given such a situation the people in such a society hesitate to come out with their mental health issues , making them prone to severe consequences such as loss of self-esteem and social exclusion.

The project aims to provide a gamified approach to mental health that appeals to a wider audience , especially the youth. Being a game it provides a space for the youth to relate to the real life scenario and use the accessible , anonymous space for the users to engage with mental health content.



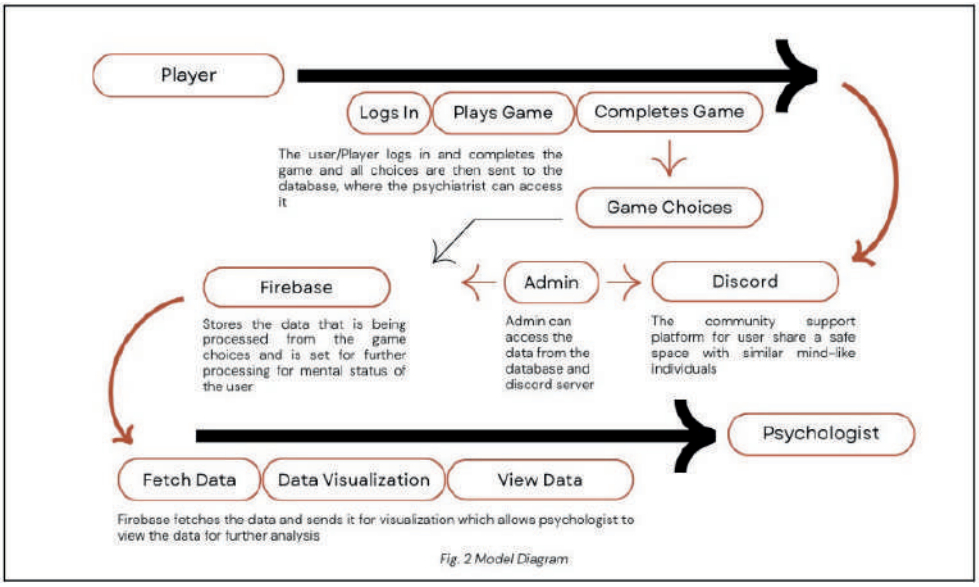


Fig. 2 Model Diagram

IDEATOR: INTERACTIVE IDEA GENERATOR USING LLM

AMAL JYOTHI S AND BHARAT HARSHAN
3 MCA B

Research and innovation are fueled by the capacity to come up with viable ideas effectively. However, coming up with a novel project or research idea is still a problem for researchers, students, and developers. This article introduces Ideator: an Interactive Idea generator using Large Language Model Agent, a smart system that comes up with new ideas based on the keywords provided by the user. With the help of LLM, this system synthesizes and analyzes related ideas from various sources. To generate project ideas, Ideator fetches data from Project repositories like GitHub and identifies possible project ideas by synthesizing repository metadata, descriptions, and trends. To generate research ideas, the system uses research repositories like the Semantic Scholar to fetch relevant research papers from which it conceives novel research ideas.

By combining Large Language Models with real-time data fetching, Ideator offers an interactive and dynamic way of generating ideas. The system architecture, implementation details, and the prospective influence of AI-assisted ideation on academic and software development circles are presented in this paper.

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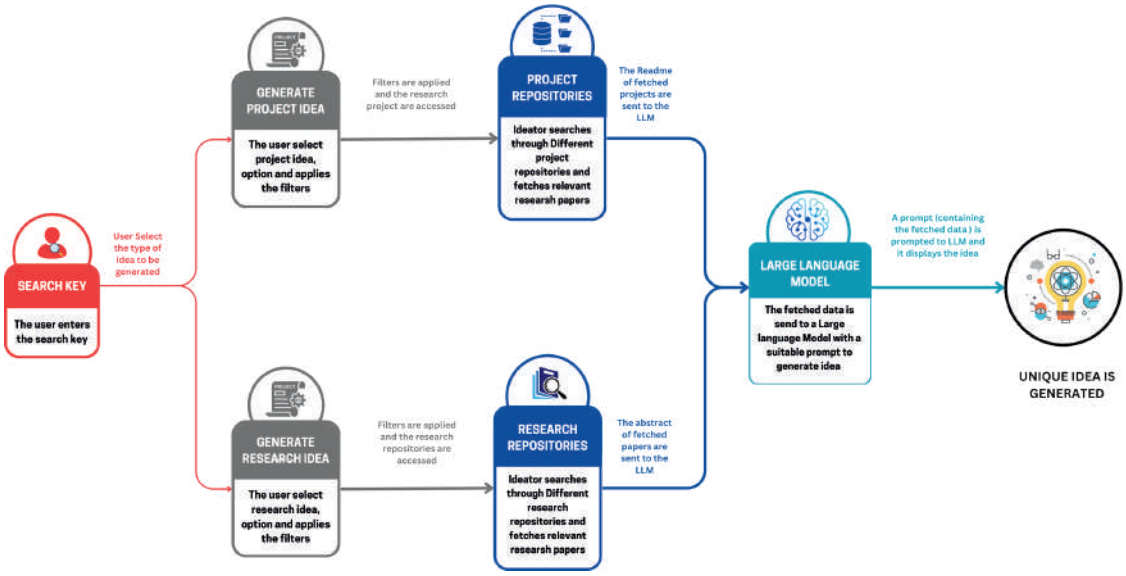
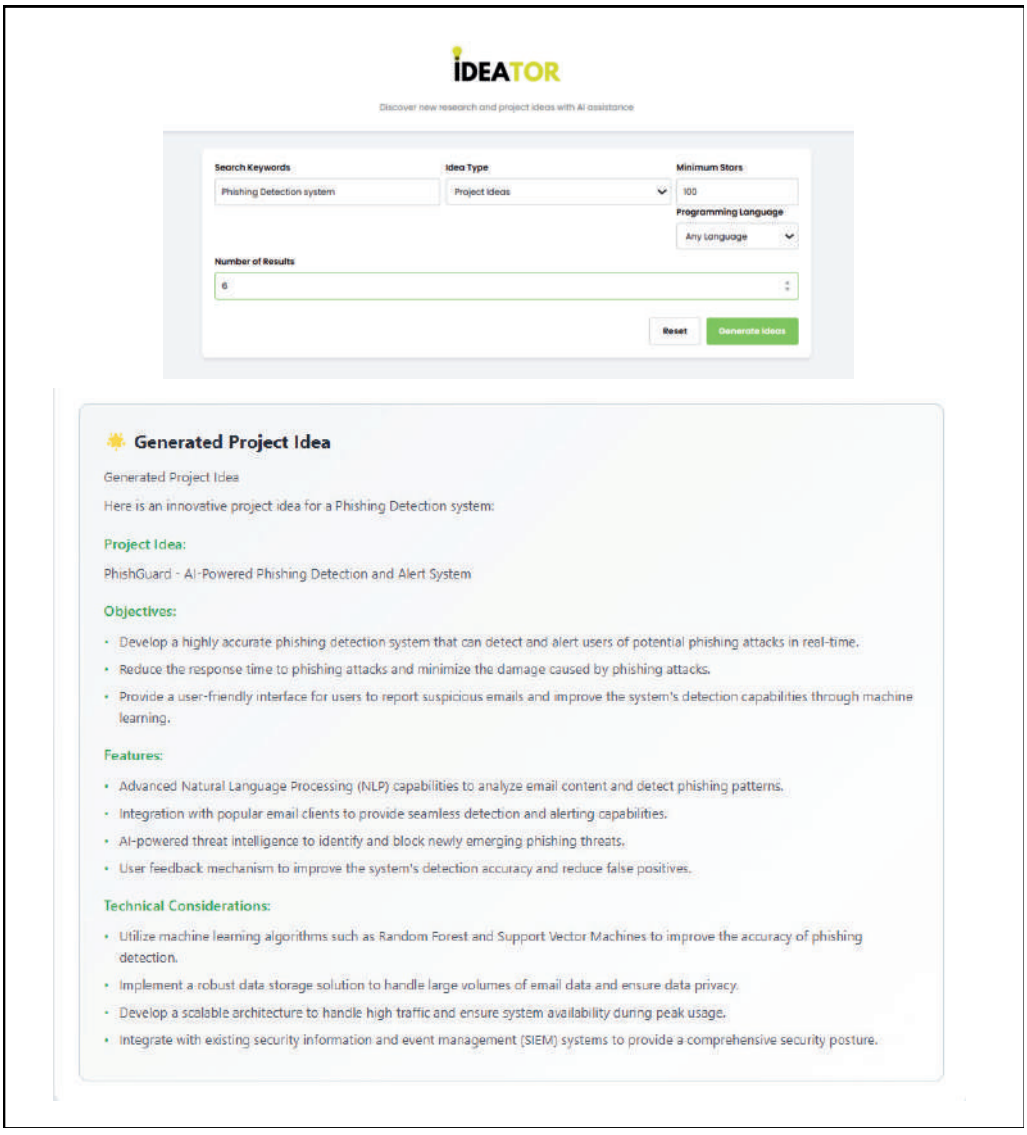
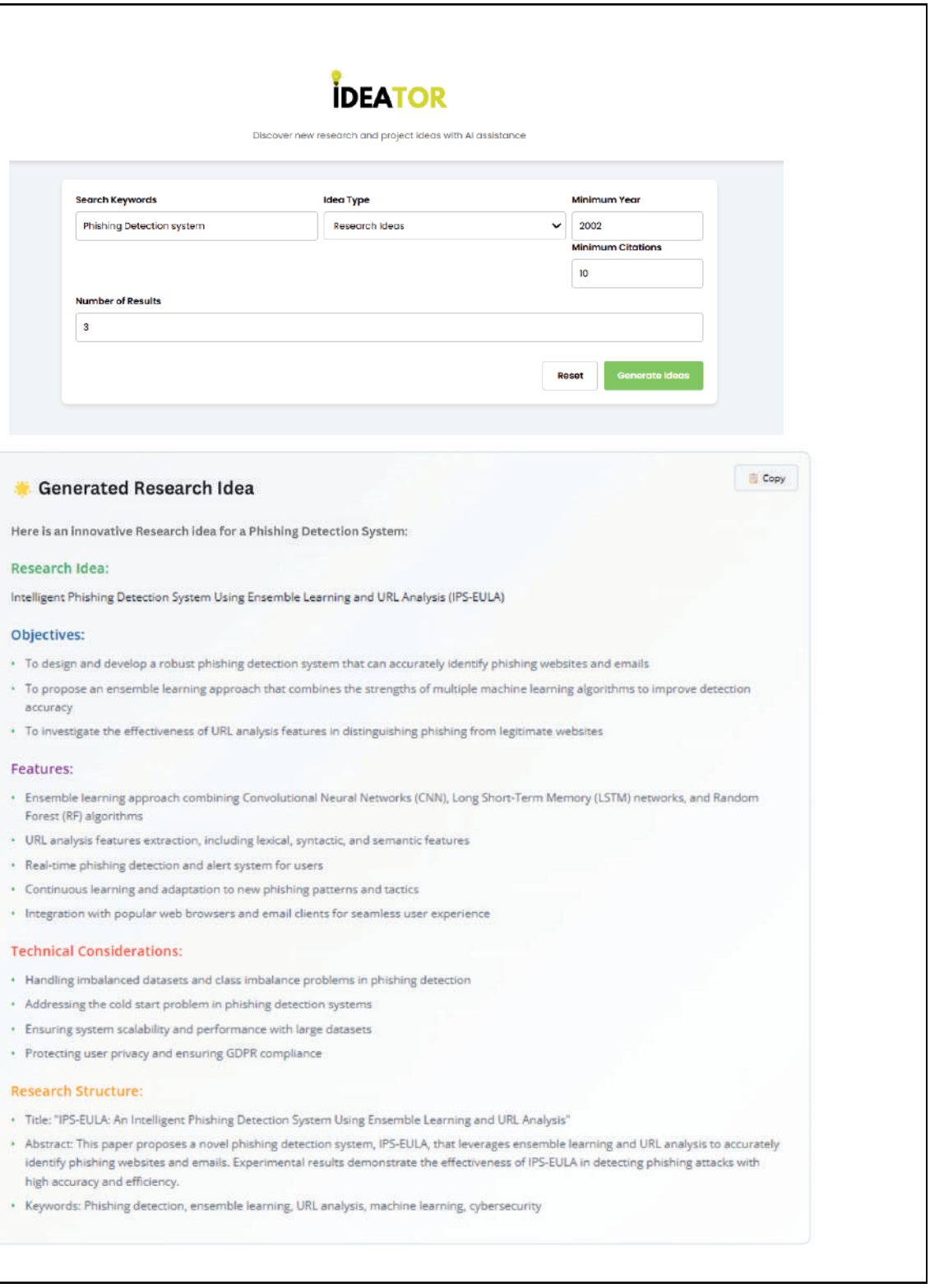

SEARCH KEY
The user enters the search key
User Select the type of idea to be generated
GENERATE PROJECT IDEA
The user select project idea, option and applies the filters
Filters are applied and the research project are accessed
PROJECT REPOSITORIES
Ideator searches through Different project repositories and fetches relevant research papers
The Readme of fetched projects are sent to the LLM
GENERATE RESEARCH IDEA
The user select research idea, option and applies the filters
Filters are applied and the research repositories are accessed
RESEARCH REPOSITORIES
Ideator searches through Different research repositories and fetches relevant research papers
The abstract of fetched papers are sent to the LLM
LARGE LANGUAGE MODEL
The fetched data is send to a Large language Model with a suitable prompt to generate idea
A prompt (containing the fetched data) is prompted to LLM and it displays the idea
UNIQUE IDEA IS GENERATED


IDEATOR
Discover new research and project ideas with AI assistance
Search Keywords
Phishing Detection system
Idea Type
Project Ideas
Minimum Stars
100
Programming Language
Any Language
Number of Results
6
Reset
Generate Ideas
Generated Project Idea
Generated Project Idea
Here is an innovative project idea for a Phishing Detection system:
Project Idea:
PhishGuard - AI-Powered Phishing Detection and Alert System
Objectives:
Develop a highly accurate phishing detection system that can detect and alert users of potential phishing attacks in real-time.
Reduce the response time to phishing attacks and minimize the damage caused by phishing attacks.
Provide a user-friendly interface for users to report suspicious emails and improve the system's detection capabilities through machine learning.
Features:
Advanced Natural Language Processing (NLP) capabilities to analyze email content and detect phishing patterns.
Integration with popular email clients to provide seamless detection and alerting capabilities.
AI-powered threat intelligence to identify and block newly emerging phishing threats.
User feedback mechanism to improve the system's detection accuracy and reduce false positives.
Technical Considerations:
Utilize machine learning algorithms such as Random Forest and Support Vector Machines to improve the accuracy of phishing detection.
Implement a robust data storage solution to handle large volumes of email data and ensure data privacy.
Develop a scalable architecture to handle high traffic and ensure system availability during peak usage.
Integrate with existing security information and event management (SIEM) systems to provide a comprehensive security posture.


IDEATOR
Discover new research and project ideas with AI assistance
Search Keywords
Phishing Detection system
Idea Type
Research Ideas
Minimum Year
2002
Minimum Citations
10
Number of Results
3
Reset
Generate Ideas
Generated Research Idea
Copy
Here is an Innovative Research Idea for a Phishing Detection System:
Research Idea:
Intelligent Phishing Detection System Using Ensemble Learning and URL Analysis (IPS-EULA)
Objectives:
To design and develop a robust phishing detection system that can accurately identify phishing websites and emails
To propose an ensemble learning approach that combines the strengths of multiple machine learning algorithms to improve detection accuracy
To investigate the effectiveness of URL analysis features in distinguishing phishing from legitimate websites
Features:
Ensemble learning approach combining Convolutional Neural Networks (CNN), Long Short-Term Memory (LSTM) networks, and Random Forest (RF) algorithms
URL analysis features extraction, including lexical, syntactic, and semantic features
Real-time phishing detection and alert system for users
Continuous learning and adaptation to new phishing patterns and tactics
Integration with popular web browsers and email clients for seamless user experience
Technical Considerations:
Handling imbalanced datasets and class imbalance problems in phishing detection
Addressing the cold start problem in phishing detection systems
Ensuring system scalability and performance with large datasets
Protecting user privacy and ensuring GDPR compliance
Research Structure:
Title: "IPS-EULA: An Intelligent Phishing Detection System Using Ensemble Learning and URL Analysis"
Abstract: This paper proposes a novel phishing detection system, IPS-EULA, that leverages ensemble learning and URL analysis to accurately identify phishing websites and emails. Experimental results demonstrate the effectiveness of IPS-EULA in detecting phishing attacks with high accuracy and efficiency.
Keywords: Phishing detection, ensemble learning, URL analysis, machine learning, cybersecurity

Interest of the New Generation in Innovative Pedagogies of Teaching

DR. SRIDEVI.R

Education is being transformed with the assistance of technological developments, evolving student needs, and mounting pressure for new learning processes. The conventional, lecture-based model, which is primarily focused on memorization through rote and passive learning, cannot be applied to students anymore. The new generation, or the so-called digital natives, is more inclined towards active, technology-based, and student-centric learning processes. This change has brought about the need for teachers to discover and employ newer, more interactive teaching pedagogies that can captivate, educate, and facilitate recall.

The Transition to Educative Innovation

Students' learning inclinations have radically altered on account of several principal factors:

Technology Integration – Today's students are digitally savvy, and hence technology forms a crucial component of quality teaching. Integration of artificial intelligence (AI), virtual reality (VR), augmented reality (AR), and gamification in learning makes it much more interactive and engaging.

Personalized Learning – Every student learns differently and at their own speed. AI-powered adaptive learning systems allow students to learn at their level of understanding, so they fully grasp before moving on.

Experiential Learning – Project learning, simulations, and case studies are all experiential in nature and enable the application of concepts learned in a practical manner and hence make learning practical and applicable.

Collaborative Learning – Online discussion boards, group projects, and interactive classroom experiences foster teamwork, problem-solving, and communication skills.

Instant Access to Information – Simple access to vast amounts of materials on the internet enables independent study and out-of-classroom learning of topics by students, and encourages self-instruction.

Teachers have thus shifted from a "teacher-centered" traditional model to a "student-centered" model, where the learner is an active participant in the learning process.

Innovative Pedagogies Popularizing Across the Globe

Some new pedagogies are transforming the learning process. The following innovative pedagogies have received much ground in schools and institutions worldwide:

1. Flipped Classroom

The flipped classroom reverses the typical instruction model by devoting time outside of the classroom for students to learn theory through video, readings, or interactive modules. The classroom is left for discussion, hands-on training, and group problem-solving. This approach enhances critical thinking and allows teachers to respond more individually to students' needs.

Benefits:

Encourages active learning and heightened understanding.

Facilitates flexibility in learning, allowing students to review material at their own pace.

Encourages more interactive interactions between students and teachers.

2. Gamification

Gamification is the act of incorporating game elements such as points, badges, leaderboards, and rewards into learning. This method keeps learning interactive, with students striving hard to accomplish things.

Examples:

Learning applications like Kahoot! and Duolingo use gamification to make learning fun.

Competition in class challenges and competitions makes students perform better.

Benefits:

Makes students more enthusiastic and motivated towards learning.

Enhances problem-solving and critical-thinking skills.

Improves levels of retention by interacting.

3. Project-Based Learning (PBL)

Project-Based Learning (PBL) allows students to work on real-world projects and problems and use their learning to develop practical solutions. It fosters creativity, research ability, and teamwork and bridges the gap between learning and implementation.

Examples:

Engineering students designing a model of a sustainable energy system.

Business students developing a marketing strategy for a start-up venture.

Benefits:

Fosters independent thinking and creativity.

Develops problem-solving and analytical skills.

Practical training enhancing employability.

4. Blended Learning

Blended learning combines traditional face-to-face learning with online content, providing a mixed and versatile learning experience. Blended learning allows students to watch online lectures, quizzes, and additional materials and engage in face-to-face activities and discussions.

Examples:
A university course taken online with online lectures complemented by in-class discussion.
Schools using online platforms like Google Classroom or Moodle for assignments and materials.
Benefits:
Offers ease and flexibility to learners.
Permits active immersion in multimedia learning.
Allows personalized learning paths.

5. Microlearning
Microlearning is based on breaking up complex ideas into short, targeted learning modules. Microlearning allows students to study concepts quickly without feeling bogged down.
Examples:
Short classes on coding rules in videos.
Mobile apps with daily five-minute language learning.
Benefits:
Aids retention through minimizing learning into a short, targeted format.
Provides learning in small, easy-to-consume chunks, thus making it readily available.
Suited best for skill and technical subjects.

6. Inquiry-Based Learning
This pedagogy encourages students to learn through questioning, researching issues, and creating solutions on their own. Instead of passively receiving information, they actively construct knowledge.
Examples:
Science students conducting experiments and drawing conclusions.
History students scouring primary sources to research historical events.
History education advantages:
Encourages curiosity and enthusiasm for learning.
Trains in research and critical thinking.
Encourages independent problem-solving.

KRABBY KOMPOSITIONS

POETRY SECTION

What we lose to fit in?

Arriving in a new place,
We wonder how to fit in with the cool crowd.
In trying to understand the crowd,
We forget who we really are.
We forbid ourselves from expressing,
until one person speaks,
disapproving of someone else's qualities,
when they are not around.
In that moment,
our character shows—
a mix of weak and strong traits.
Over time, we realize that our weak traits
might become the topic of conversation in our absence.
We start changing,
building strengths others value,
hiding traits that might become
a topic of conversation.
In this process, we lose who we are.
and become what the crowd values.
Understand:
No one is perfect.
We all have strengths and weaknesses.
What matters is
how we react to them,
how we see ourselves.
There will always be people who don't value you.
But don't let that person be you.

– Siddhant Deora
3 MCA B

Past Memories

In the little shade of a sapling,
The morning fresh dew upon the leaves,
Lieth a lingering presence of your absence
Like a shadow with a silver lining.

The pale moonlight in the dead of the night,
Silver shadows perched upon the leaves of the lone branch.
The owl on the tree,
Howl O'er my vain world
Yet, no echoes to be heard
For the chambers of my soul are boundless

The Sinking Chime of Loneliness
Between just me and my voices at the edge
May the shadows of thine unuttered past remain eternal
At a silent corner in my heart
Never to wake,
Yet never to extinguish

-Alex Khundongbham
MSc AI ML

Where does it all go?

I often ponder when we hit our lowest, where does all love run out? Where does all the happiness vanish, how do you become a version of yourself, that you never thought you could be right?

Time passes by, Everything you come across becomes a memory, eventually becoming a piece of who you are, and consuming all that this Universe throws at you, is real courage, to be able to accept a "you" that is always changing and constantly being acceptive of who you are, and this very thing is what Self-love is right? Self-love truly just comes down to accepting yourself in any form, and not just that but a love that makes you want to grow, and nothing is more exciting as self-growth and honestly, I wish;

To living more days of happiness, sorrows, confusion, excitement, love, and all sorts of emotions which change often like the shades of the sky yet have their own originality which weirdly makes us "us".

- Shobha Mary
MCA B

The Weight of the Abyss

Hark, ye who wander ‘neath the waning light,
Burdened, bent, bound to the yoke of unseen chains.
The air is thick with whispers, unseen wraiths that gnaw,
And in the depths, the abyss calls—ever patient, ever hungering.
Dost thou feel it? The weight unseen, yet ever crushing,
A hand upon thy throat, yet none to claim it.
Once, the path was clear, bathed in golden glow,
Yet now it winds, ever narrowing, ever darkening.
The stars, once guiding, have fled their posts,
Cowards all, leaving naught but the ashen sky.
And thee, weary traveler, step by step,
Dost carry burdens nameless, yet heavy still.
Aye, the world is a maw, gaping, waiting,
It feasts upon the weary, the lost, the broken.
It knows thy name, yet speaks it not,
It watches, yet offers no hand,
For mercy is but a tale told in dying tongues.
Wilt thou fall, as many have,
Swallowed whole by the creeping dread?
Or dost thou yet clutch the ember close,
A feeble light ‘gainst the ever-hungering dark?
The abyss doth not relent, nor does it tire—
Yet neither shall thee, not this day.

-Alex Khundongbham
MSc AI ML

"The Light of True Friendship"

A friend is that feeling, always by my side,
A shadow that stays with me far and wide,
A hand in mine, never to divide.
A friend is the feeling of laughter through tears,
A moment of joy when sorrow appears.
Sometimes they sulk, sometimes they cheer,
Sometimes they forget, yet always stay near—
This is the mark of true friendship, clear.
Bound by the heart, together in pain,
A promise to stand through sunshine and rain,
A bond so true, never in vain.
One friend's smile becomes the other's delight,
One's sorrow fills the other's sight.
A connection built with a heart so true,
That is what makes a friend like you.
May the lamp of friendship forever stay bright,
May our bond remain strong in its light.

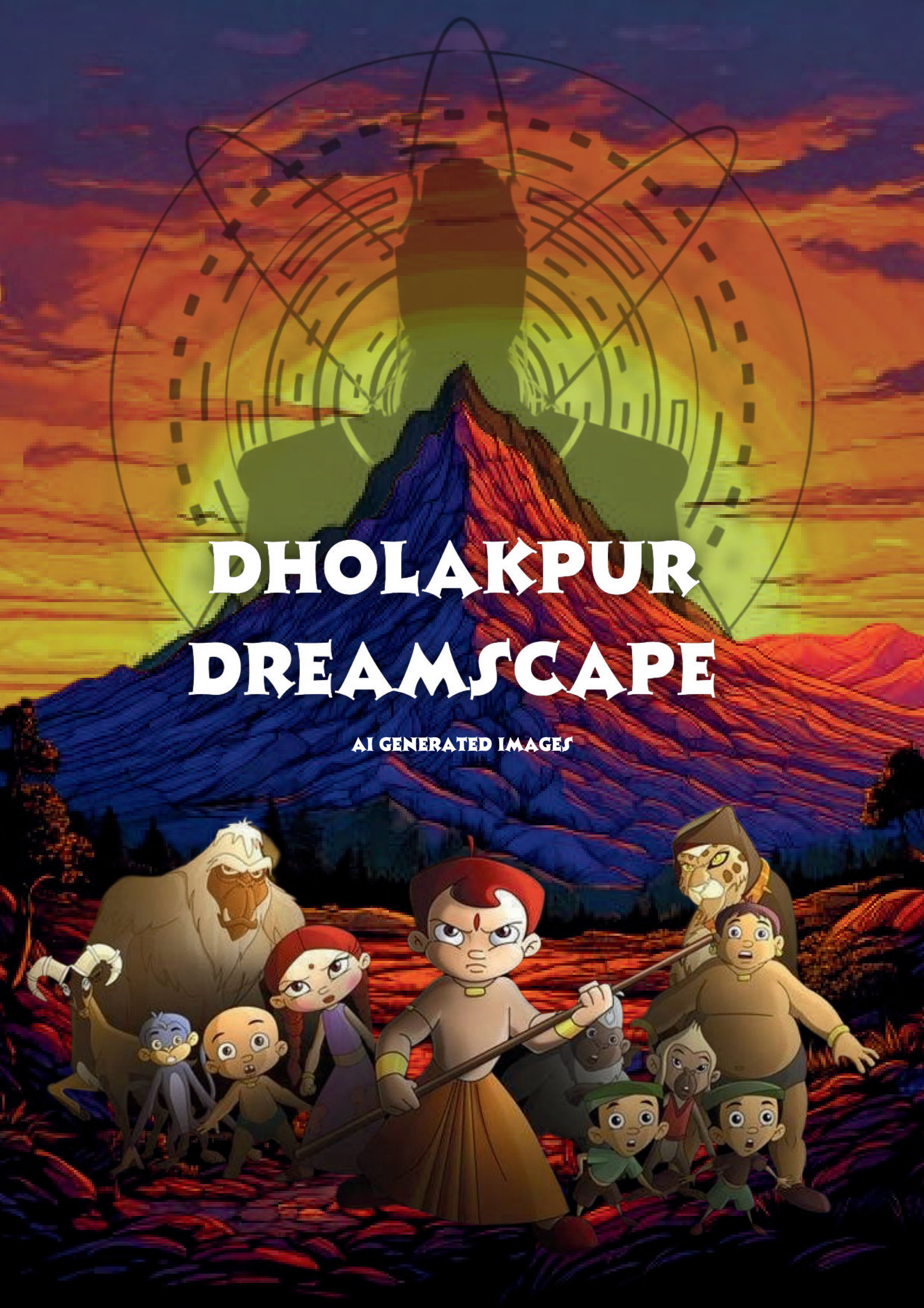
-Dr . Neha Singhal

The Way We Live

Everything is good, yet seems so bad,
Society blames, it makes us sad.
When we have fun, they call it wrong,
When we are free, we don't belong.

Born alone, we live, we die,
Through ups and downs, we laugh, we cry.
Life is one, but dreams are many,
One last breath, like all, if any.

-Jesvin Joyson
MSc AIML


DHOLAKPUR
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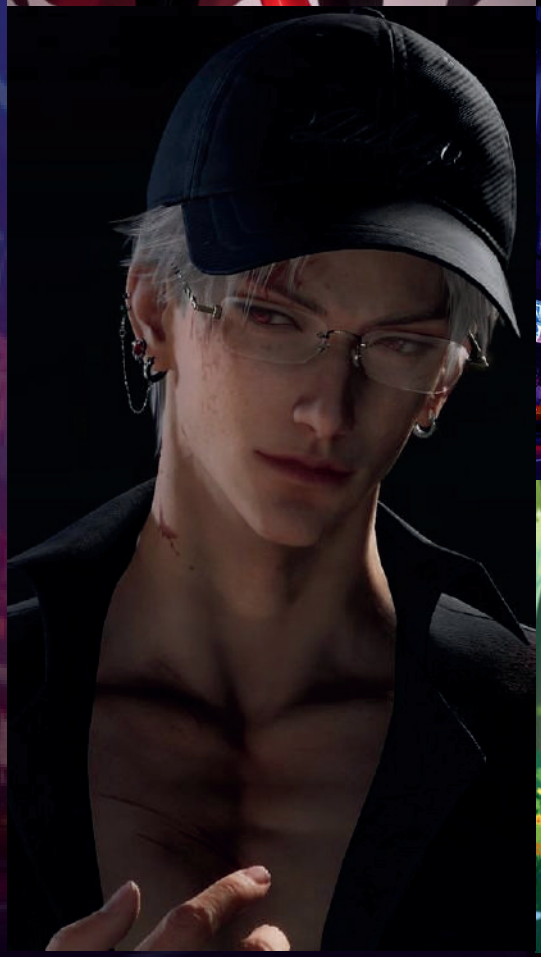

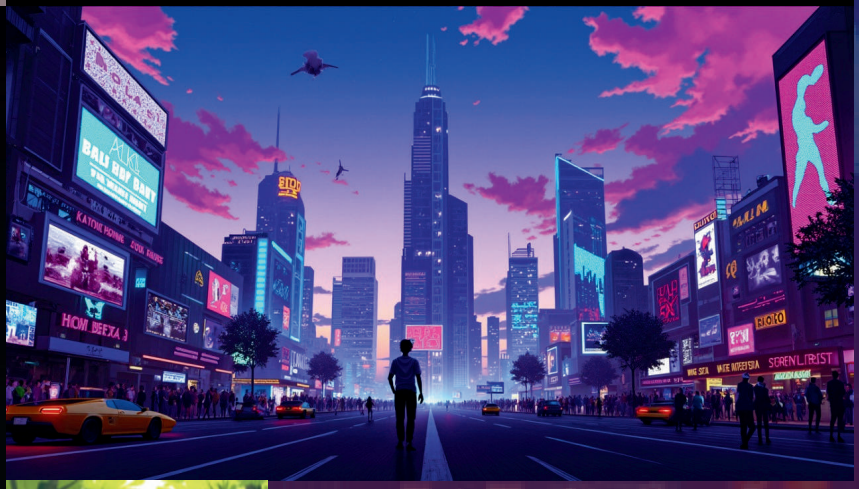

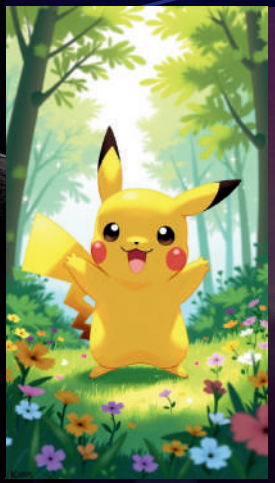

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BEAN'S BRUSHSTROKES

ARTWORK SECTION

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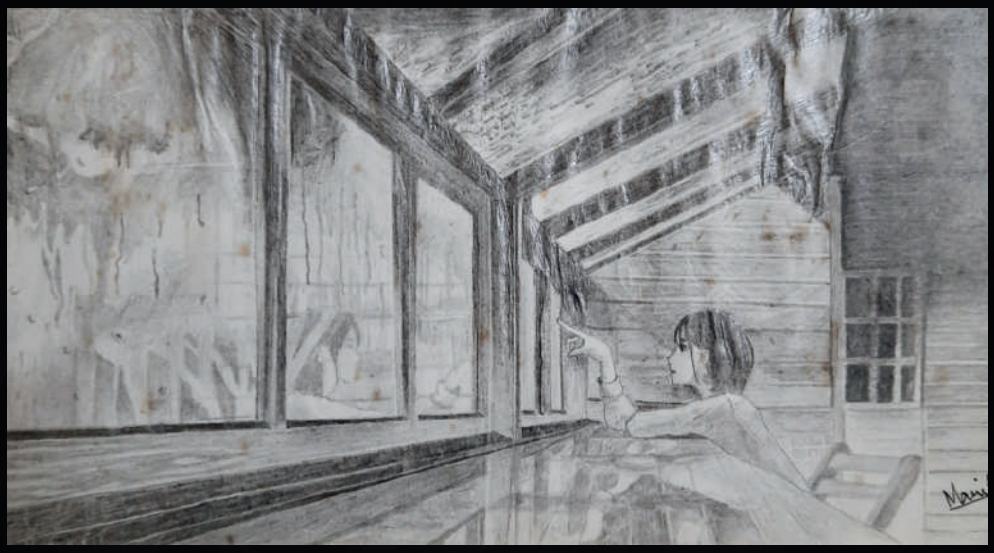

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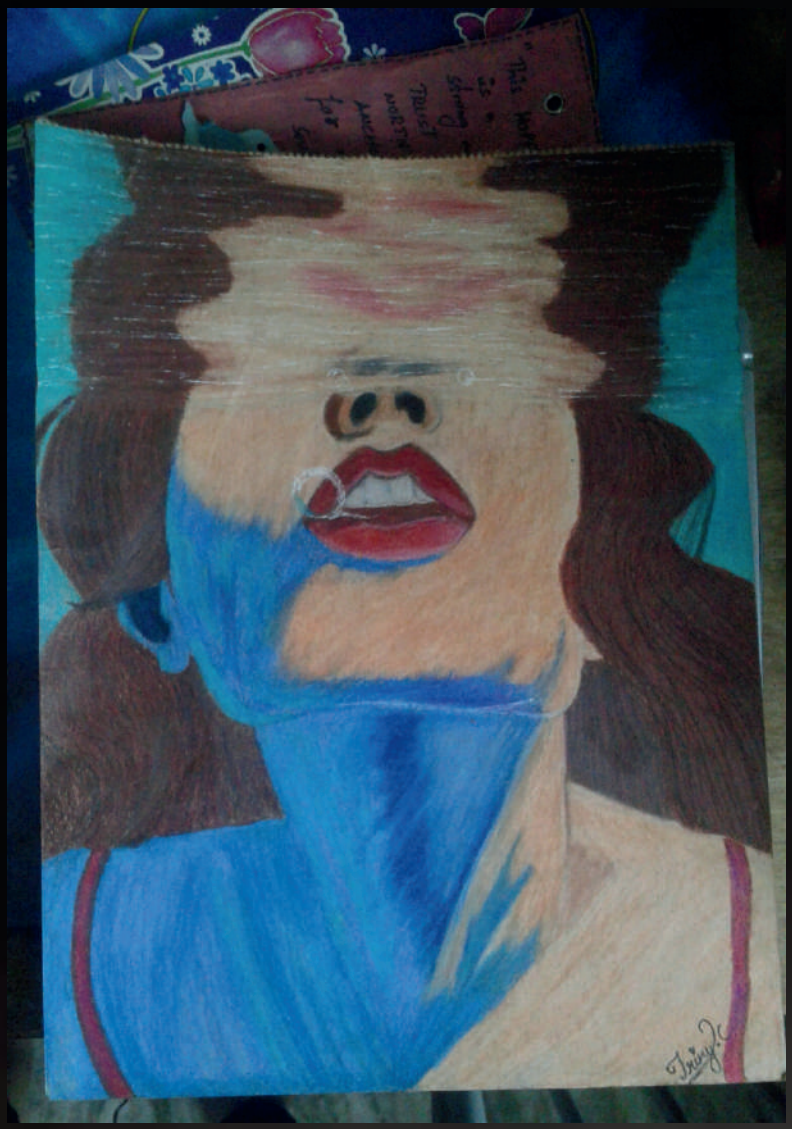

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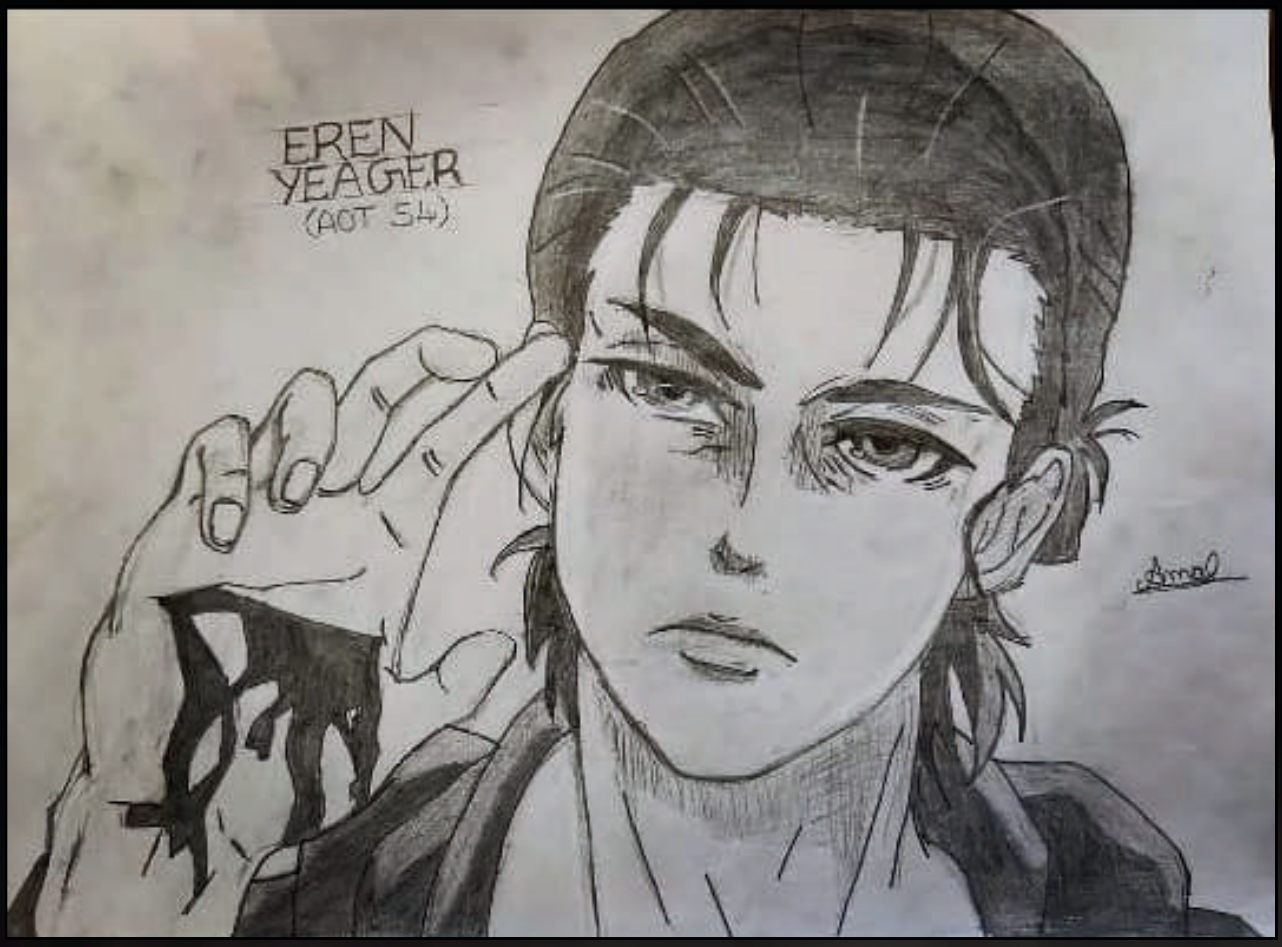

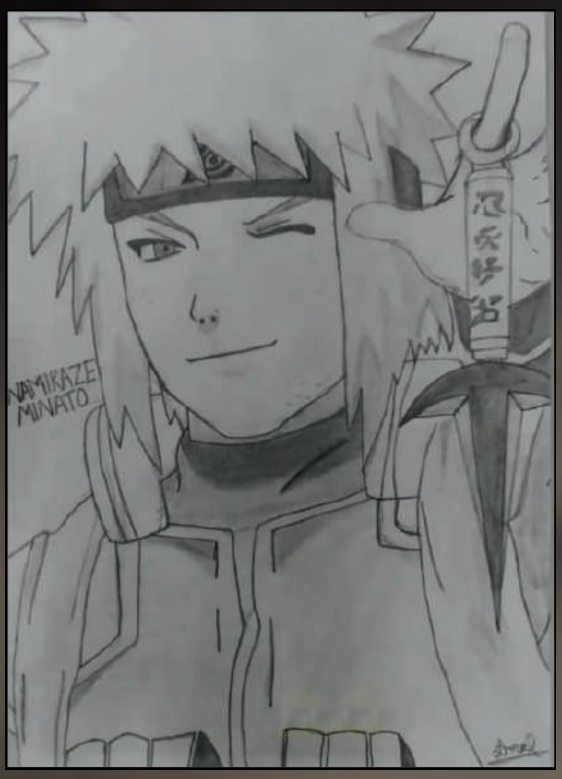

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MARIAM SARA SHIJI
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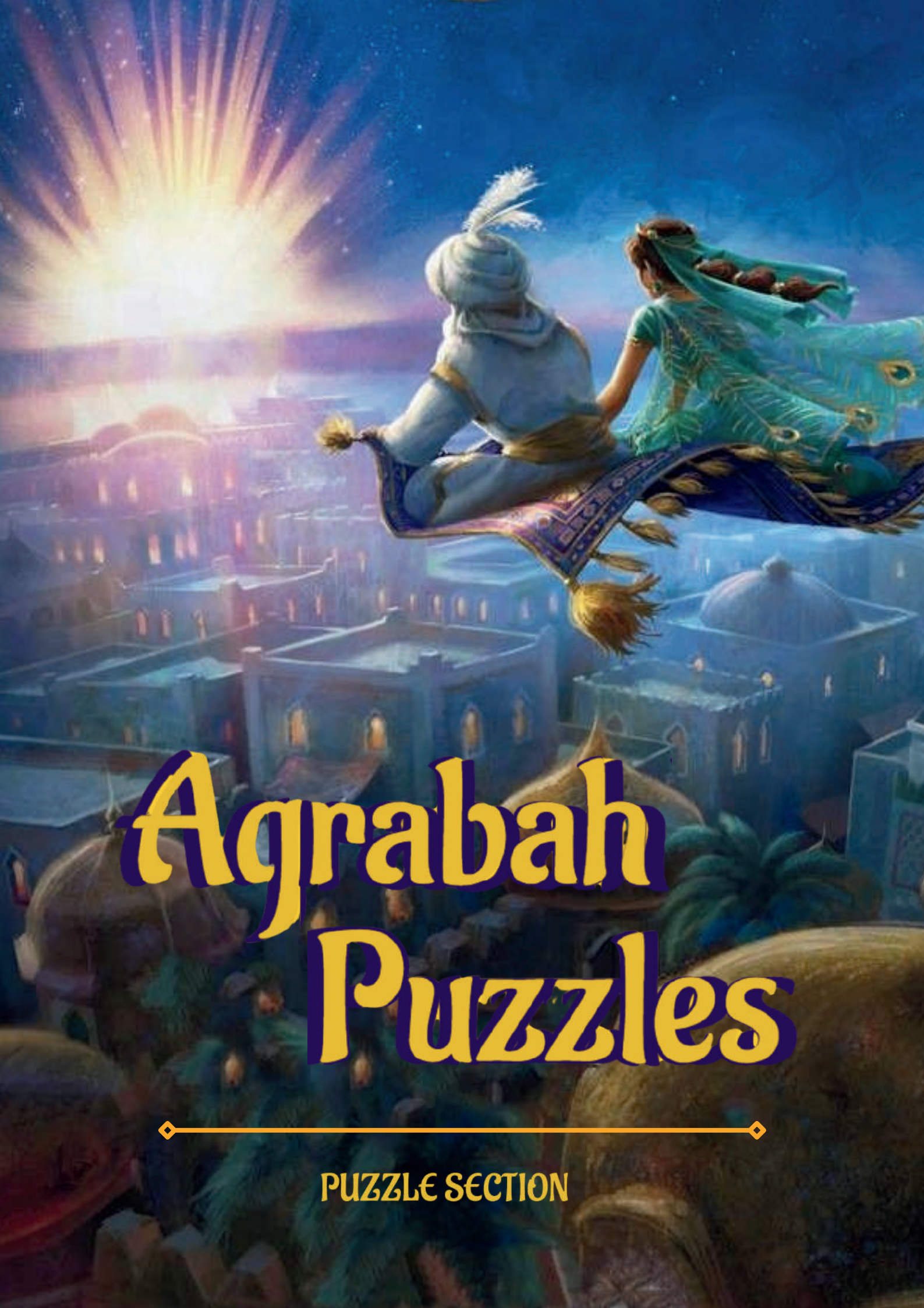
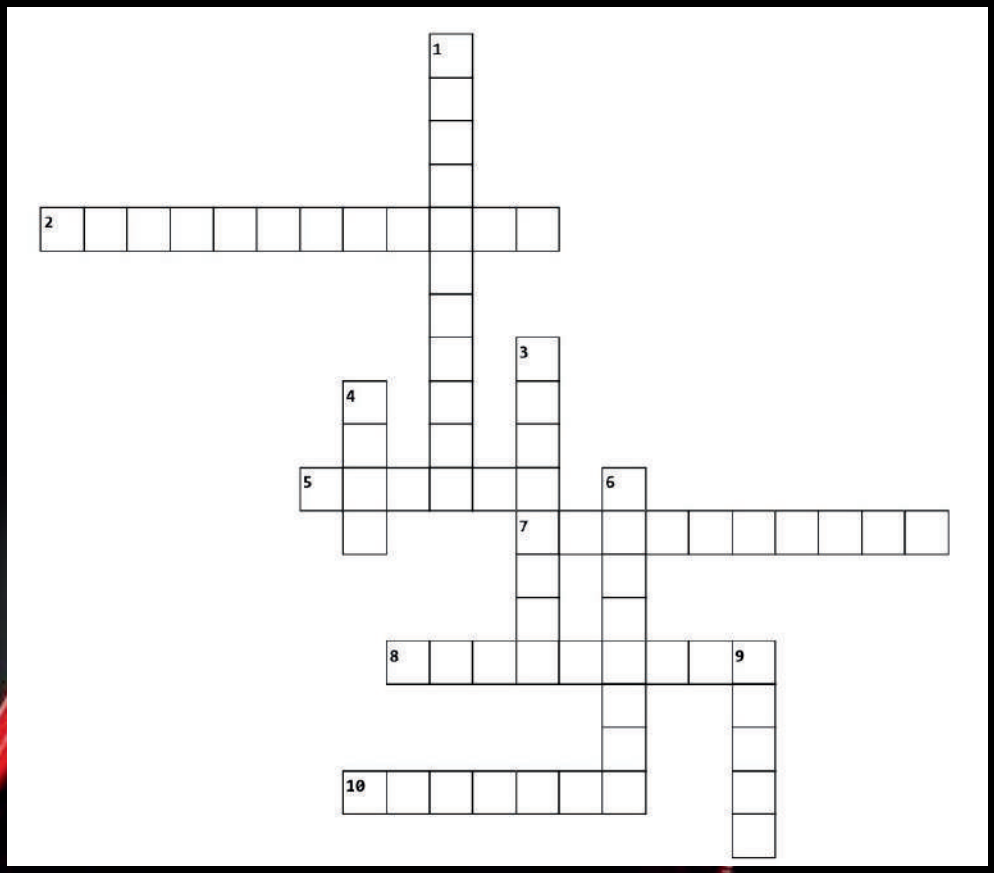

Agrabah
Puzzles
PUZZLE SECTION

Classic Cartoon Crew

Guess the iconic cartoon characters based on the clues provided!



ACROSS

2. A team of superheroes who morph into colorful outfits to fight evil
5. A quirky, silent character known for his hilarious antics
7. A brave and strong boy from Dholakpur who loves to protect his friends
8. A sponge who lives in a pineapple under the sea, working at the Krusty Krab
10. A poor boy who finds a magic lamp and wins the heart of Princess Jasmine

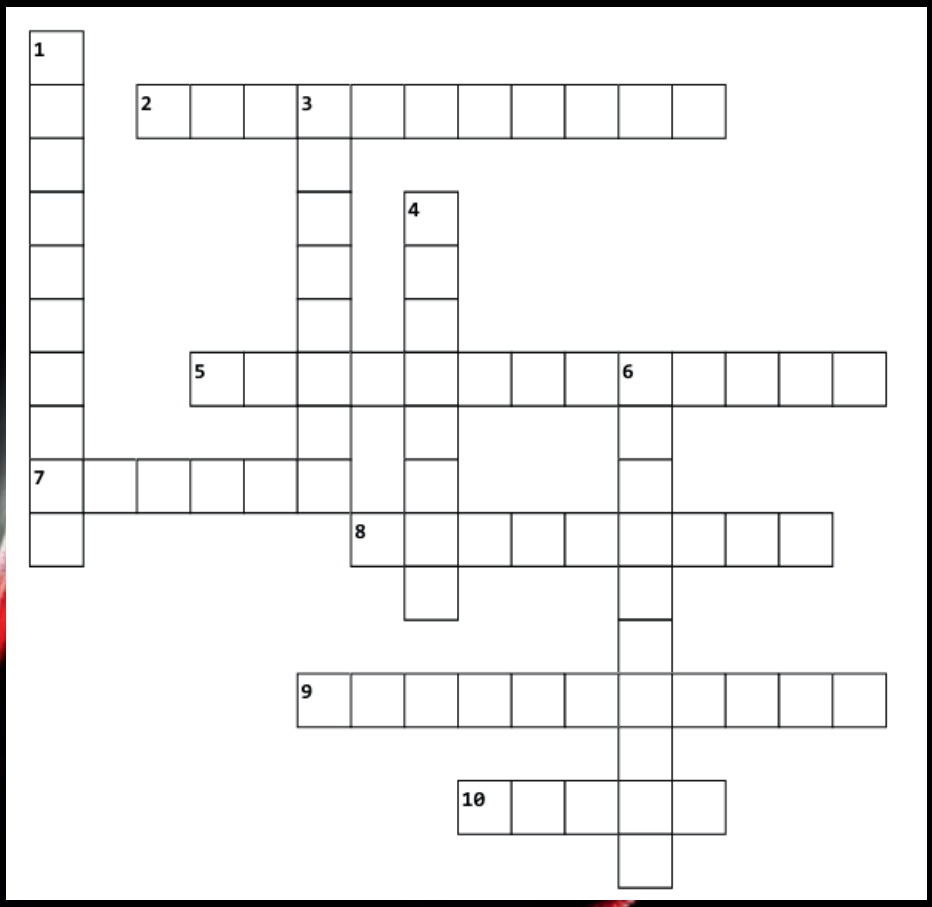
DOWN

1. The iconic Disney character known for his cheerful personality and big ears
3. A mischievous, playful boy known for his funny antics and rude behavior
4. A young, adventurous girl who loves to explore and solve puzzles with her talking backpack
6. A robot cat from the future who helps a young boy navigate life
9. A boy with a watch that lets him transform into various alien forms

Malavika Manoj
3 MCA-B

Cartoon Chronicles

Dive into a world of animated legends showcasing timeless characters and their unforgettable traits!



ACROSS

2. A mischievous boy from Springfield with a rebellious streak
5. A martian who constantly tries to destroy Earth, but his plans never succeed
7. A lovable beagle known for his daydreaming and alter ego as a World War I flying ace
8. A zany duck who often finds himself in rivalry with Bugs Bunny
9. A suave, silent pink cat who finds himself in comical situations
10. The bumbling father of the Simpson family

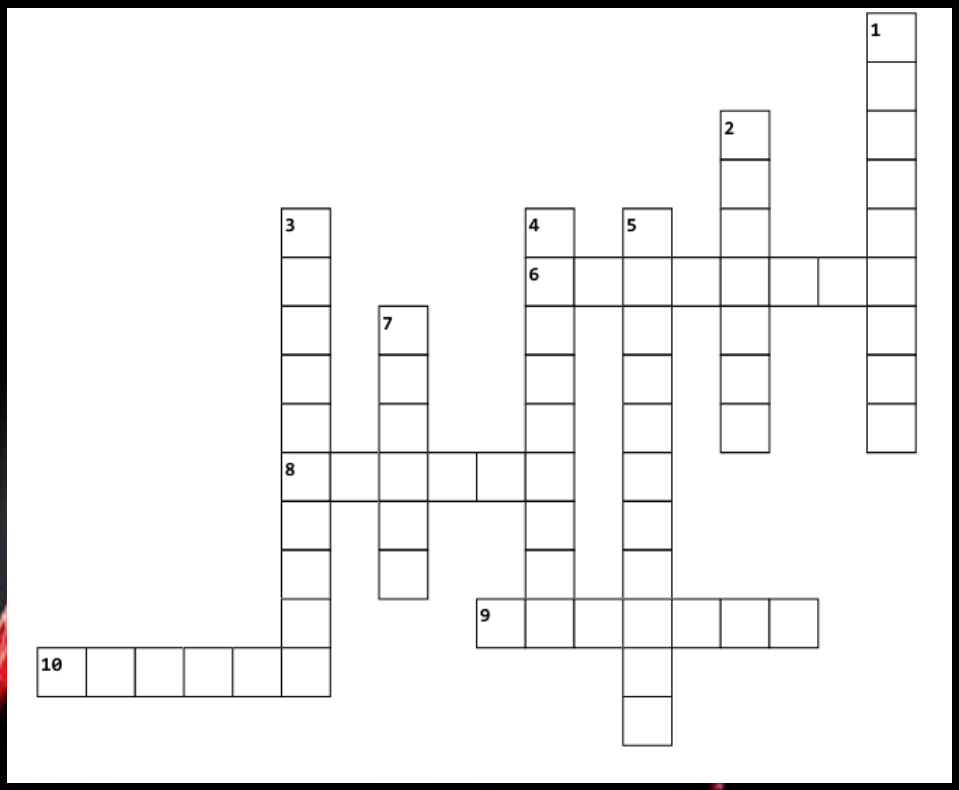
DOWN

1. The cheerful and iconic Disney character with big ears and red shorts
3. The iconic cat always chasing a clever mouse
4. A clever bear who always tries to steal picnic baskets
6. A speedy bird who always outsmarts Wile E. Coyote

Bharat Harshan
3 MCA-B

Animated Icons!

Step into the world of classic cartoons , celebrating legendary characters and their unforgettable adventures!



ACROSS

6. The pink panther's main enemy, an unlucky detective
8. The fastest mouse in all of Mexico, known for saying "¡Ándale! ¡Ándale!"
9. A cowardly dog who always ends up saving his owners from monsters
10. An old-school sailor who gets super strong after eating spinach

DOWN

1. This rabbit's famous catchphrase is "What's up, doc?"
2. The futuristic family with a robotic maid, Astro the dog, and flying cars
3. A caveman from Bedrock, best friends with Barney Rubble
4. A mystery-solving Great Dane with a gang of meddling kids
5. The iconic cat always chasing a clever mouse
7. A mischievous yellow canary constantly outsmarting Sylvester

Amal Jyothi
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Shin-Shots

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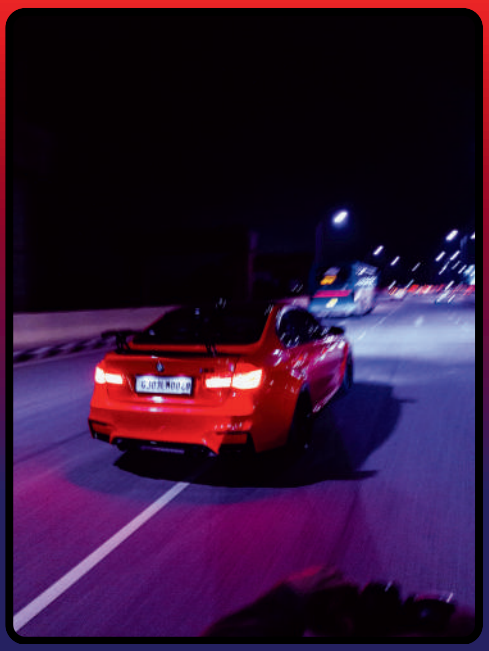

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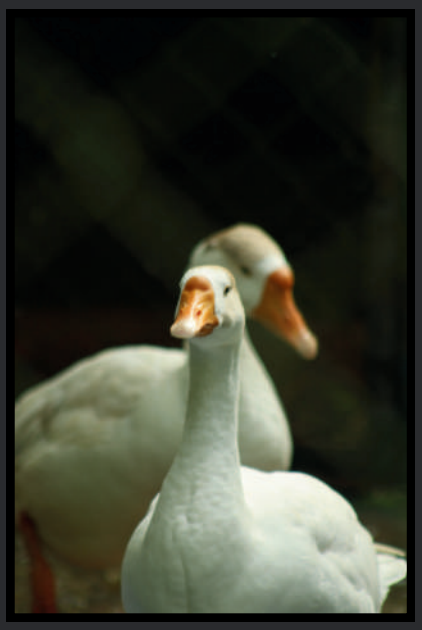

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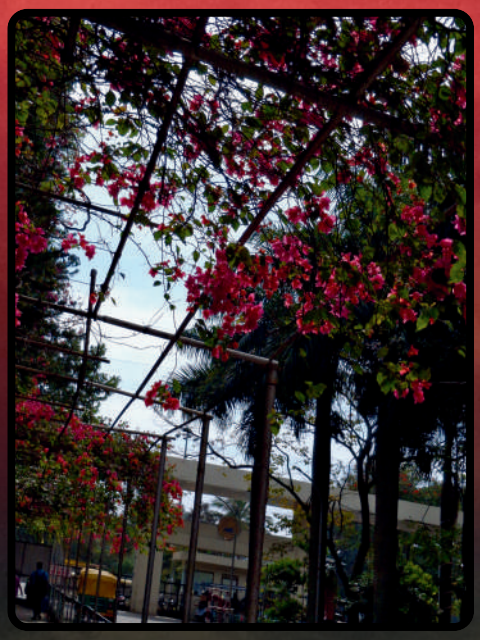

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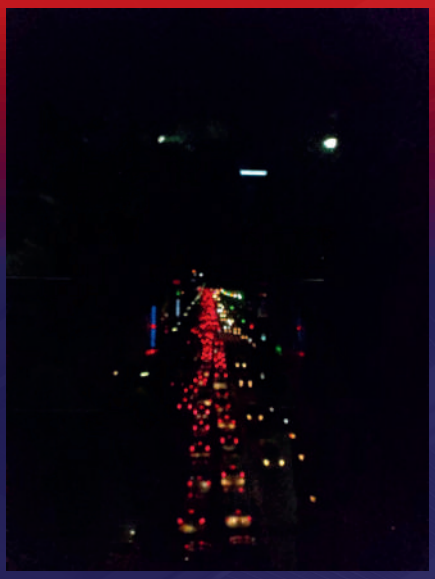

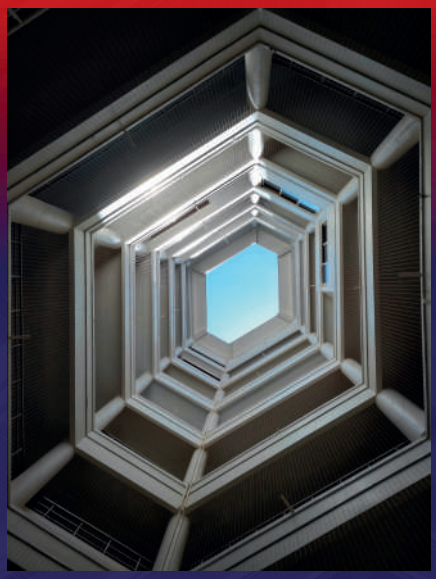

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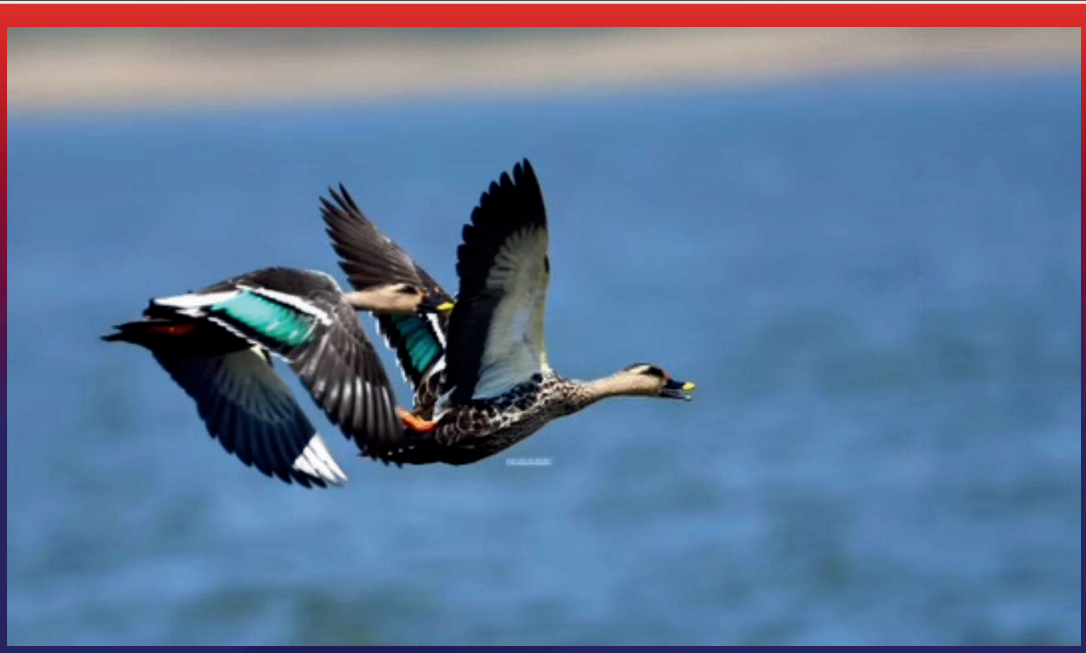

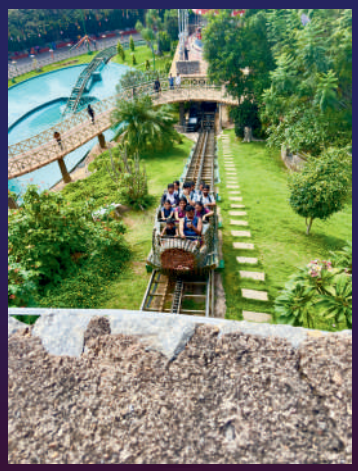

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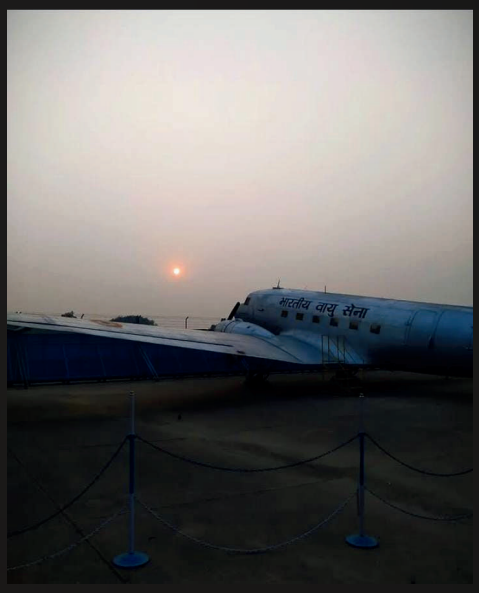

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