AI, ML and Data Science

1.Building a Proctoring System.

Description:

Design and implement a comprehensive proctoring system for online exams using advanced technologies like facial recognition, gaze tracking, and keystroke analysis. The system should be capable of preventing unauthorized access, detecting cheating attempts in real time, and ensuring a secure online examination environment. The challenge includes optimizing the system's accuracy while minimizing false positives and negatives.

2. NLP Solutions for Deaf People.

Description:

Design a natural language processing (NLP) solution aimed at converting spoken language into sign language for individuals with hearing impairments. The system should operate in real time and apply to diverse linguistic contexts. Participants must consider the nuances of sign language translation and strive for both accuracy and speed in the conversion process.

3.Emergency Registering Chatbot.

Description:

Over the past few years technology has advanced by leaps and bounds but to report an emergency (fire accidents, road accidents etc.) we still have to wait on a phone call for an operator to pick up. There is also no way for the victim to show any evidence of an emergency or an accident. Create a chatbot that can collect preliminary information about the emergency just like an operator would over a phone call. The question asked by the chatbot should be based on the type of incident. It should also be able to accept images and other files when relevant.

All the collected information should then be sent to the relevant department. The chatbot should be able to analyze the severity of the incident based on the user's input.

4.Deep Fake Detector.

Description:

In the current world of rapidly advancing generative AI, People are now able to create fake images and videos of people promoting various scams. The unknowing public is being scammed by this. Hence, deep fake advances are vital to create systems that can detect and flag deep fake images and

videos circulating on various social media platforms.The goal is to create a detector that can automatically find, detect and flag deepfake content as such on social media platforms like Instagram.

5.OCR-based Paper Valuation:

Description:

Create an OCR-based solution for automating the grading process of handwritten exams. The system should accurately interpret and evaluate handwritten answers, providing timely feedback to students. The challenge involves developing a reliable OCR algorithm that can handle various handwriting styles and ensuring seamless integration with the grading workflow.

6.Facial Attendance Tracker.

Description:

Develop an advanced facial attendance tracker that can integrate with web or mobile applications. This system will simplify attendance tracking using facial recognition technology, ensuring accurate attendance records are displayed in the application

IoT

1.IOT based Drug prevention and intervention system.

Description: Develop a Technological Solution to Combat Drug Abuse by creating IoT-enabled devices or applications that monitor and intervene in risky behaviors, provide support resources, or facilitate early detection and intervention strategies to prevent substance misuse and addiction.

2.Automatic braking system.

Description: Approximately 1.5 million people die due to road accidents in India alone. One of the major causes of the accidents is Distracted Drivers. The goal of this problem statement is to make the cars able to automatically sense the obstacles ahead and apply emergency breaks when necessary. The system developed should have the following properties:

- Easily retro fit-able into existing cars
- Apply breaks to prevent the car from crashing into the obstacle Can be a car, a wall, or pedestrians based on the speed of the vehicle.

3.IoT-Based Smart Waste Management System for Smart City.

Description: In the present day scenario, many times we see that the garbage bins or Dust bins placed at public places in the cities are overflowing due to an increase in waste every day. It creates an unhygienic condition for the people and creates a bad smell around the surroundings that leads to the spread of some deadly diseases & and human illnesses. Design an “IoT Based Waste Management for Smart Cities " which can overcome these problems.

4.Develop a lOT- enabled android application to give real-time parking space available on the campus.

Description: In the present scenario of the pandemic automatic parking system is one of the important prototypes that we need. Hence design an IoT-based android application for a parking system to detect an available parking slot in a parking space.

5.Traffic Management and Optimization.

Description: Explore a smart transportation system equipped with IoT sensors for traffic monitoring, vehicle tracking, and congestion detection. They must make decisions about traffic signal optimization, route planning, and congestion mitigation strategies based on real-time traffic data collected from the sensors. This exercise would teach students about traffic management and urban planning using IoT technology.

6.Smart Sewage Worker Safety System.

Description: Develop an IoT-based solution tailored for sewage workers to address challenges related to respiratory difficulties and exposure to poisonous gases in their work environment. The solution should incorporate sensors to monitor air quality and detect the presence of hazardous gases in real-time. The goal is to enhance worker safety and mitigate health risks associated with their occupation through proactive monitoring and alert mechanisms

WEB/APP Development

Note : A web or mobile application can be developed under this domain.

1. **Create a digital hub for neighborhoods to boost community safety engagement using Web/App development.**

Description: Craft an online hub enabling residents to report safety issues, receive instant alerts, interact with neighbors, and cooperate with law enforcement. This platform aims to streamline reporting incidents, staying informed with timely alerts, connecting with neighbours, and coordinating with local authorities. Its core functionalities cover incident reporting, real-time alerts, community chat, engagement tools, safety materials, and seamless integration with law enforcement agencies. The objective is to elevate both community safety and cohesion through enhanced connectivity.

2. **Emotional Well-being Tracker using Web/App development.**

Description: Develop a Web/App application with an intuitive interface aimed at promoting frequent self- evaluation of emotional state. The app will offer self-assessment surveys, mindfulness activities, and links to nearby mental health support services. The objective is to foster habitual emotional introspection and improve mental health. Essential functionalities will encompass monitoring progress, setting reminders, and ensuring robust privacy and security protocols.

3. **Creating an interactive gaming Web/App platform focused on Children's Rights to enhance legal awareness among Indian youth.**

Description: The aim is to develop a gamified Web/App platform on Children's Rights, fostering legal literacy among Indian children through engaging gameplay. Real-life scenarios will be simulated, aiding comprehension of legal rights. Personalized learning paths will be facilitated through modular modules tailored to individual requirements. The platform will prioritize inclusivity with intuitive design and language translation options. Social features will encourage collaboration, linking children with experts and organizations. Integration with support services will provide access to legal guidance as necessary. Ultimately, the platform aims to empower children, increasing their involvement in legal processes and advancing social justice.

4. **Develop a Crisis Management and Relief Platform using a web/app platform.**

Description: Develop an online platform aimed at enhancing emergency response efficiency during natural disasters or crises by fostering improved coordination among volunteers, resources, and affected parties. This platform acts as a central hub for seamless disaster management, facilitating instant communication and resource allocation. Key features include volunteer sign-up, resource inventory management, and communication tools tailored for orchestrating relief efforts. Additionally, it offers a user-friendly interface accessible to both responders and affected individuals, ensuring optimized crisis response and relief operations.

5. **Develop a web/app platform integrating diverse services to enhance urban living.**

Description: The platform endeavors to revolutionize urban landscapes into intelligent, ecofriendly habitats by amalgamating cutting-edge technologies and utilities. Prominent attributes entail live traffic surveillance, streamlined waste handling, monitoring energy consumption, and optimizing public transportation schedules. By harnessing data-driven analytics and judicious resource distribution, the platform endeavors to elevate the general standard of living, nurture ecological balance, and stimulate economic prosperity across urban domains.

6. **Gamified Cybersecurity Awareness Web/mobile Application.**

Description: Develop a web/mobile application aimed at promoting cybersecurity awareness through a gamified approach. The objective is to create an engaging platform that educates users about cybersecurity principles, best practices, and potential threats in an interactive gaming environment. The application should incorporate elements of gamification to enhance user engagement and retention while effectively conveying essential cybersecurity concepts. The goal is to empower users with the knowledge and skills necessary to safeguard their digital assets and navigate online risks effectively.

Miscellaneous

1.Enhancing security, efficiency, and interoperability in managing medical data with blockchain technology.

Description:

The project endeavors to establish a blockchain-driven repository for healthcare records, bolstering security and facilitating seamless data exchange. Its core objective is to construct a robust digital storage infrastructure for medical records, leveraging blockchain's inherent security features. Safeguarding sensitive medical data while ensuring accessibility is paramount in the healthcare sector. Conventional record-keeping methods often suffer from inefficiencies, lack of robust security measures, and interoperability issues. Addressing these challenges, the project harnesses blockchain's immutable nature and formidable security protocols to provide a comprehensive solution.

2.Creating software to dub videos from English into various Indian regional languages for wider accessibility.

Description:

CIPAM is involved in producing promotional and educational videos about Intellectual Property in India. Developing software capable of dubbing videos from English into different Indian regional languages would facilitate broader dissemination of such content for public education. The software needs to generate voiceovers resembling human speech in languages such as Hindi, Marathi, Bengali, Gujarati, Tamil, Telugu, etc., along with translated text supers. The translated voiceover should be straightforward and devoid of colloquial expressions, ensuring easy comprehension. A sample video has been provided for reference purposes.

3.Optimizing data collection from Chemical and Petrochemical Industries nationwide to enhance strategic decision-making and insight generation.

Description:

Creating a solution for these industries involves standardizing data formats and integrating stakeholders' systems. Efficient mechanisms, including automation, are necessary for data aggregation. Criteria and algorithms will be established to determine the optimal data level while adhering to privacy regulations. Analytical tools will aid in identifying trends and generating insights for strategic decisions. Strong data privacy and security measures are crucial for safeguarding sensitive information. Ultimately, the solution aims to streamline processes, promote data-driven decisions, foster collaboration, and drive industry innovation and growth.

4.Development of Small-Scale Wind Energy Device.

Description:

Challenges in implementing small-scale wind turbines arise due to urban landscapes and physical limitations. Large turbines outperform their smaller counterparts. Common obstacles include:
(1) Rigorous regulation in the energy sector
(2) Limited awareness and information
(3) Restricted technology accessibility
(4) Lack of market competition
(5) High transaction costs
(6) Inadequate market infrastructure
(7) Significant investment requirements.
Anticipated Outcome: Introduction of an eco-friendly energy alternative. Wind energy stands as a pristine alternative to fossil fuels, being both free and renewable.

5.**Utilizing Image Analytics for Forest Land Diversions' Tree Census.**

Description:

Creating an image analytics system to automate tree counting in forest land diversion initiatives, utilizing satellite imagery or aerial photos. Essential components encompass precise tree identification, enumeration, and classification, cross-referenced with on-site verification. The system should be scalable, effective, and smoothly interfaced with forestry management platforms, offering intuitive visual representations. Ethical dimensions involve safeguarding privacy and minimizing environmental repercussions. Ultimately, this system aims to facilitate informed decisions, promote conscientious land management, and foster sustainable developmental approaches.