



PROBLEM STATEMENTS

AI/ML

Problem Statement 1:

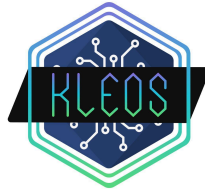
In day-to-day operations, decision-makers often encounter unforeseen circumstances that deviate from the original plan. These circumstances can range from unexpected weather conditions to changes in aircraft versions, among other issues. Currently, these problems are primarily solved using human judgement, which can be inconsistent. The challenge is to develop an advanced software tool, leveraging machine learning, Deep Learning algorithms, or artificial intelligence, to provide more consistent and optimal solutions for these operational issues. This tool should be capable of adapting to changing situations and guiding decision-makers towards the best possible outcomes, thereby reducing the reliance on variable human performance. The ultimate goal is to enhance operational efficiency and decision-making consistency in the face of unpredictable operational circumstances.

Problem Statement 2:

In the design community, there is a vast array of fonts available, each with its unique style and character. However, designers often face the challenge of finding the perfect font that encapsulates the essence of their work. While individual fonts offer specific aesthetics, the ability to combine different fonts to create a new one could provide designers with a tool to their specific needs. Propose an innovative AI/ML-based tool that analyzes the characteristics of diverse fonts and generates new font combinations that are visually appealing and complementary. The challenge is to create a user-friendly interface that allows designers to input preferences for font combinations enabling them to efficiently experiment with and discover new, unique font pairings for their design projects.



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Problem Statement 3:

Using AI Chatbots to Tackle Health Misinformation: Healthcare chatbots have the potential to provide instant and reliable medical information to patients, improving access to trustworthy health-related details. This challenge focuses on employing AI-based chatbots to share information on public health issues. The goal is to generate responses to common queries by leveraging machine learning algorithms to expand the dataset of questions and answers. Ensuring the mapping remains accurate as the dataset grows will be a key aspect of addressing this challenge.



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Problem Statement 4:

Develop a code which should be able to identify different types of vegetables (such as tomatoes, potatoes) through images captured by the user's phone. The code should estimate the quantity and weight of the vegetables in the image and check the items in the provided list they intend to purchase. The code should be designed to work in a typical shopping scenario where the vegetables are displayed on a table. The goal is to streamline the shopping process, reduce waste by buying only the necessary quantities, and enhance the user's shopping experience.



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Automation

Problem Statement 1:

The electrical distribution network, comprising both underground and overhead lines, is a critical component of the power system infrastructure. However, it is susceptible to various faults due to factors such as equipment failure, environmental conditions, human errors, etc. Identifying and locating these faults promptly and accurately is a significant challenge. The traditional methods of fault detection and location are often time-consuming and may not provide precise results, leading to prolonged power outages and increased operational costs. The proposed problem is to develop a system that can identify and predict the exact location of faults in the underground and overhead line distribution network. This system can leverage data such as current, voltage, direction, fault history, and publicly available navigation & environmental data.

Problem Statement 2:

Design a machine learning-based solution to transform a city's bus service into a smart, adaptive, and user-centric network. The solution should analyze population density data to identify areas with high populations. Based on this analysis, it should propose new bus routes or optimize existing ones to better serve these high population areas. The goal is to enhance mobility, accessibility, and sustainability, while also reducing travel time for the city's residents. Ultimately, this will lead to a more efficient and user-friendly public transportation system in Mumbai.



SECURITY AND AI

Problem Statement 1: AI-Powered Logs Monitoring and Anomaly Detection

In the ever-evolving landscape of cybersecurity, the rapid growth of digital assets and interconnected systems has led to an exponential increase in the volume and complexity of log data generated by various applications, devices, and networks. Traditional methods of manual log analysis and rule-based anomaly detection are no longer sufficient to identify sophisticated threats and abnormal behaviors effectively. Thus, there is a pressing need for advanced artificial intelligence (AI) solutions capable of automated logs monitoring and anomaly detection.

Objective: The objective of this challenge is to develop AI-driven algorithms and systems that can effectively monitor logs from diverse sources and detect anomalous patterns or behaviors indicative of potential security breaches or malicious activities. Participants are tasked with creating innovative solutions that leverage machine learning, natural language processing (NLP), and other AI techniques to analyze log data in real-time, identify abnormal activities, and trigger timely alerts for further investigation.

Datasets:

- KDD Cup Datasets - The KDD Cup is an annual data mining competition organized by the Association for Computing Machinery's Special Interest Group on Knowledge Discovery and Data Mining (ACM SIGKDD). The competition has released several datasets related to cybersecurity, including network intrusion detection datasets.
- DARPA Intrusion Detection Evaluation Datasets: The Defense Advanced Research Projects Agency (DARPA) has released datasets related to intrusion



detection and network traffic analysis. These datasets contain network traffic logs and are suitable for training and evaluating models for detecting anomalies and cyber threats.

Outcome:

- **AI-Powered Anomaly Detection System:** The primary outcome would be the creation of an AI-powered system capable of analyzing logs from diverse sources and identifying anomalous patterns or behaviors indicative of potential security breaches or malicious activities.
- **Real-Time Monitoring and Alerting:** The developed solution should enable real-time monitoring of log data and timely generation of alerts upon detecting suspicious activities. This outcome would empower security teams to respond promptly to emerging threats and mitigate potential risks.

Build a system that utilizes AI to enhance user authentication methods, such as facial recognition or behavioral biometrics, for ensuring secure access to sensitive data.

Web / app - A web application or mobile application will be appreciated for this problem statement.

Features :

- **Dashboard Overview:** The dashboard would feature an overview section displaying key metrics related to logs monitoring and anomaly detection. This section might include metrics such as total logs processed, number of anomalies detected, and current system status.
- **Log Data Visualization:** The main section of the dashboard would present visualizations of log data, allowing analysts to explore trends, patterns, and anomalies. This could include interactive charts, graphs, and histograms representing various log attributes such as timestamps, source IP addresses, and event types.



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- Alerts Panel: A dedicated alerts panel would highlight detected anomalies and suspicious activities in real-time. Each alert would include details such as the type of anomaly, severity level, timestamp, and affected system or resource. Analysts can click on individual alerts to view more information and take appropriate actions.



Problem Statement 2: Deepfake Detection for Video Authentication

Participants are tasked with developing an AI-based deepfake detection system capable of distinguishing between authentic and manipulated videos, addressing the following key objectives:

Objective: Deepfake technology utilizes deep learning algorithms to create highly realistic fake videos by superimposing the facial expressions, gestures, and speech patterns of one individual onto another's likeness. These synthetic videos can be used for various malicious purposes, including spreading false information, defaming individuals, or manipulating public opinion. Detecting deepfakes is crucial for safeguarding the credibility and trustworthiness of visual media in the digital age.

The objective of this project is to develop an AI-driven solution for detecting deep fake videos and ensuring the integrity and authenticity of visual content in online platforms. The solution aims to address the growing threat of misinformation, disinformation, and digital manipulation by identifying synthetic or altered videos generated using deep learning techniques.

Dataset Acquisition and Preprocessing: Collect or curate a diverse dataset of videos containing both authentic and deepfake content, spanning different contexts, languages, and individuals. Preprocess the dataset to extract relevant features, such as facial landmarks, speech patterns, and temporal dynamics, and standardize the data format for model training.

Feature Representation and Learning: Design deep learning architectures, such as convolutional neural networks (CNNs), recurrent neural networks (RNNs), or transformer-based models, for analyzing video frames and audio segments to identify telltale signs of deepfake manipulation. Explore multimodal fusion techniques to integrate visual and auditory cues for more robust detection performance.



Model Training and Evaluation: Train the deepfake detection model on the labeled dataset using supervised learning techniques, optimizing for performance metrics such as accuracy, precision, recall, and area under the receiver operating characteristic (ROC) curve. Evaluate the model's generalization ability and robustness to unseen deepfake variants using cross-validation or holdout validation strategies.

Real-time Detection and Deployment: Implement the trained deepfake detection model into a real-time video authentication system capable of analyzing streaming video content from online platforms and social media networks. Develop integration mechanisms, such as browser extensions, API endpoints, or platform plugins, to enable seamless deployment and adoption by end-users and content moderators.

Implementation Guidelines:

- Utilize publicly available deepfake detection datasets, such as DeepFake Detection Challenge (DFDC) dataset, FaceForensics++ dataset, or Celeb-DF dataset, for training and evaluation.
- Collaborate with digital forensics experts, media integrity organizations, and online platforms to validate model effectiveness, assess real-world performance, and integrate the detection system into existing content moderation workflows.

Output: Deliver an AI-driven deepfake detection system capable of accurately identifying manipulated videos and distinguishing them from authentic content in real-time. Provide documentation, model code, and validation results to support the deployment and adoption of the detection system by online platforms, media outlets, and content creators.

By addressing the challenge of deepfake detection for video authentication using AI techniques, the project aims to enhance cybersecurity measures, combat disinformation campaigns, and preserve the integrity and trustworthiness of visual media in the Security and AI domain.



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Web /app - A web application or mobile application is needed for this problem statement.



GENERATIVE AI

Problem Statement 1: Multi-Lingual Financial Security Bridge

In a diverse linguistic landscape like India, accessibility to financial services and protection against cyber fraud are paramount. However, a significant barrier exists due to the multitude of regional languages spoken across the country. To bridge this gap, we aim to develop an application that facilitates seamless communication between users and financial institutions by enabling translation between regional languages and English, without altering the meaning of the text.

The application will address the following key requirements:

- **Language Translation:** The application should accurately translate input text or speech from regional languages such as Marathi, Hindi, Tamil, Telugu, and Bengali to English, ensuring that the meaning of the content remains intact during the translation process.
- **Financial Documentation Processing:** Users should be able to interact with various financial services such as account opening forms, fixed deposit forms, and personal loan applications in their preferred regional language. The application should seamlessly translate these documents into English for processing by financial institutions.
- **Cyber Fraud Detection and Prevention:** In addition to facilitating financial transactions, the application must integrate robust cyber fraud detection mechanisms to safeguard user data and prevent financial fraud. It should analyze text inputs for potential fraudulent activities and provide alerts or guidance to users accordingly.
- **Compliance with Cyber Security Laws:** The application should adhere to relevant cyber security laws and regulations to ensure the confidentiality, integrity, and availability of user data. It should incorporate measures for



data encryption, secure authentication, and compliance reporting to mitigate cyber security risks.

- User Feedback and Action Loop: To continuously improve the application's performance and address emerging challenges, it should feature a user feedback mechanism. Users should be able to report scams or fraudulent activities encountered through the application, triggering appropriate actions from the development team to enhance security measures.
- Bot Interface for Public Service: The application should employ a user-friendly bot interface to assist users in navigating financial transactions, understanding cyber security best practices, and accessing relevant public services. The bot should provide real-time responses to user queries and guide them through various processes.
- Training Data for Language Model: To enhance the accuracy and efficiency of language translation, the application should leverage a comprehensive training dataset comprising diverse linguistic patterns and regional language variations. This dataset will be used to train the underlying natural language processing (NLP) models for optimal performance.
- Optical Character Recognition (OCR) Integration: The application should support Optical Character Recognition (OCR) functionality to extract text from images containing regional language content. This feature will enable users to translate text from physical documents or images captured through their mobile devices.
- Collaborative Code Development: The application development process should involve collaborative efforts from developers, linguists, cyber security experts, and financial industry professionals. Collaboration platforms such as Google Colab should be utilized for efficient code sharing and version control.



- **Output Modalities:** The application should support multiple output modalities, including text translation, voice synthesis, and image upload. Users should have the flexibility to choose their preferred mode of interaction based on their accessibility needs and preferences.

APPLICATIONS IN REAL LIFE:

- **Access to Financial Services:** Users can interact with financial institutions and services in their preferred regional language, eliminating language barriers that may have previously hindered their ability to open accounts, apply for loans, or invest in financial products.
- **Translation Assistance:** Individuals can translate financial documents, forms, and communication from regional languages to English, enabling them to understand the content accurately and make informed decisions regarding their finances.
- **Cyber Fraud Prevention:** The application provides real-time fraud detection alerts and guidance to users, helping them identify and avoid potential scams or fraudulent activities in their financial transactions conducted online.
- **Compliance and Security:** Users can rest assured that their personal and financial data are protected by robust cyber security measures, ensuring compliance with relevant laws and regulations and mitigating the risk of data breaches or identity theft.
- **User Feedback and Improvement:** The application encourages user feedback regarding cyber security incidents or translation accuracy issues, enabling continuous improvement and refinement of its features and functionalities.
- **Accessible Communication:** By offering multiple output modalities such as text translation, voice synthesis, and image upload, the application

ensures accessibility for users with diverse needs and preferences enhancing their overall experience in engaging with financial services and cyber security protection measures.

Overall, this application serves as an essential tool in daily life for individuals navigating the complex landscape of financial transactions and cyber security risks in multilingual environments. It empowers users with language translation capabilities and robust security features, facilitating informed decision-making and safeguarding their financial well-being in an increasingly digital world.

Web /app - A web application or mobile application is needed for this problem statement.



Problem Statement 2: Personalized Career Roadmap for Engineering Students

Scenario: A second-year engineering student seeks guidance on achieving their dream role or job after graduation. The student provides their year of engineering and specifies their desired career path, such as data analyst, software developer, or any other role. The application dynamically adjusts the timeline based on the student's current academic year to ensure they are adequately prepared before entering their final year, aligning with the timeline for campus placements.

Key Components:

- **User Input and Dream Role Specification:** The application prompts the user to input their current year of engineering (e.g., second year) and specify their dream role or desired job (e.g., data analyst, software developer). Collect additional information such as preferred industry, technology interests, and career aspirations to tailor recommendations effectively.

Skill Assessment and Gap Analysis: Analyze the user's academic background, coursework, projects, and extracurricular activities to assess their current skill set and proficiency level in relevant areas. Compare the user's skills and knowledge to the requirements and expectations of their dream role to identify skill gaps and areas for improvement.

- **Dynamic Timeline Generation:** Dynamically adjust the timeline for skill acquisition and career preparation based on the user's current academic year and the timing of campus placements. Provide a personalized roadmap with recommended skills to learn, projects to undertake, and resources to explore, ensuring the user is adequately prepared by the time of placement season in their final year.



- **Technology Stack and Learning Resources:** Recommend specific technologies, programming languages, frameworks, tools, and platforms relevant to the user's dream role and industry preferences. Provide curated lists of online courses, tutorials, books, and other learning resources to help the user acquire the necessary skills and knowledge.

Challenges:

- **Timely Preparation:** Ensuring the user is adequately prepared with the required skills and knowledge before the commencement of campus placements in their final year.
- **Skill Relevance:** Recommending skills and technologies that are aligned with the user's desired career path and industry trends.
- **Dynamic Adjustments:** Adapting the timeline and recommendations based on the user's changing academic year and evolving career goals.

Guidelines:

- **Dynamic Timeline Generation:** Develop algorithms to dynamically generate a timeline for skill acquisition and career preparation based on the user's current academic year and placement season timing. Adjust the timeline iteratively as the user progresses through their academic journey and updates their career goals.

- **Personalized Recommendations:** Recommend a tailored set of skills to learn, projects to undertake, and resources to explore based on the user's profile and career objectives. Provide guidance on the optimal sequence of learning activities and milestones to achieve proficiency in key areas before the placement season.

By addressing these challenges and implementing the proposed solution, the application aims to empower engineering students with personalized career guidance and a structured roadmap to pursue their dream roles

effectively, ensuring they are well-prepared for success in their future careers.

Web/App : Overall, the web or app interface provides engineering students with personalized career guidance and a structured roadmap to help them achieve their dream roles effectively and prepare for success in their future careers.



MACHINE LEARNING

Problem Statement 1: Customer Churn Prediction for Telecommunications Company

Customer churn, or the loss of customers, is a critical challenge for telecommunications companies, leading to revenue loss and decreased customer satisfaction. Predicting customer churn accurately can help telecom companies proactively identify at-risk customers and implement retention strategies. This challenge focuses on developing machine learning models to predict customer churn for a telecommunications company using historical customer data.

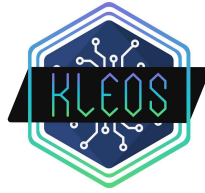
Objective: The objective of this challenge is to develop machine learning models for predicting customer churn in a telecommunications company. Participants are tasked with building predictive models that leverage historical customer data, including demographic information, usage patterns, service subscriptions, and customer interactions, to identify customers likely to churn in the future. The solutions should enable telecom companies to target retention efforts effectively and reduce customer attrition rates.

Anomaly Detection and Early Warning Systems: Implement anomaly detection algorithms to identify unusual patterns or deviations in customer behavior that may precede churn events. Build early warning systems that flag anomalous behavior in real-time and trigger proactive interventions to prevent customer attrition before it occurs.

Web/App: Once the machine learning models and early warning systems are developed and validated, they can be integrated into an application or web platform. This application can provide real-time alerts and insights to telecom companies, allowing them to take proactive actions to retain at-risk customers. The app/web interface can include features such as dashboards,



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visualizations, and customizable alerts to facilitate decision-making and intervention planning.



Problem Statement 2: Predictive Maintenance for Industrial Equipment Using Machine Learning

Participants are tasked with building a predictive maintenance model that addresses the following key objectives:

Objective: The objective of this project is to develop a predictive maintenance solution for industrial equipment using machine learning techniques. The solution aims to predict equipment failures and maintenance needs in advance, enabling proactive maintenance scheduling and minimizing downtime.

Background: Industrial equipment, such as turbines, pumps, and motors, is critical for the operation of manufacturing plants, power plants, and other industrial facilities. Unexpected equipment failures can lead to costly downtime, production losses, and safety risks. Predictive maintenance leverages machine learning algorithms to analyze sensor data and predict equipment failures before they occur, allowing maintenance activities to be scheduled proactively.

Dataset Selection and Preprocessing: Identify publicly available datasets related to industrial equipment health monitoring and maintenance history. The dataset should include sensor readings, operational parameters, maintenance records, and failure events for the equipment of interest. Preprocess the dataset to handle missing values, normalize sensor readings, and extract relevant features for predictive modeling.

Failure Prediction Modeling: Develop machine learning models for predicting equipment failures based on historical sensor data and maintenance records. Explore supervised learning algorithms such as logistic regression, random forests, or gradient boosting machines to classify equipment health states as normal or anomalous. Train the models on labeled examples of normal and failure instances to learn patterns



indicative of impending failures.

Prognostics and Remaining Useful Life (RUL) Estimation: Extend the predictive maintenance model to estimate the remaining useful life (RUL) of the equipment before failure. Utilize time-series analysis techniques, survival analysis, or regression models to predict the remaining lifespan of the equipment based on its current health condition and historical degradation patterns. Incorporate uncertainty estimates and confidence intervals to quantify prediction uncertainty and inform maintenance decisions.

Evaluation and Validation: Evaluate the performance of the predictive maintenance model using metrics such as accuracy, precision, recall, and F1-score. Validate the model's effectiveness in detecting equipment failures and predicting RUL on unseen test data, ensuring robustness and generalization across different equipment types and operating conditions.

Implementation Guidelines:

- Explore publicly available datasets from sources such as the NASA Prognostics Data Repository, the C-MAPSS dataset, or datasets from industrial automation competitions on platforms like Kaggle.
- Utilize Python-based libraries such as scikit-learn, TensorFlow, or PyTorch for building predictive maintenance models and conducting data analysis.

Expected Outcome:

- Early detection of equipment failures.
- Proactive maintenance scheduling.
- Improved equipment reliability and availability.
- Cost reduction.
- Enhanced safety and compliance.



Web/App:

- **Data Visualization and Monitoring Dashboard:** Develop a web or app interface that allows users to visualize sensor data, equipment health metrics, and maintenance predictions in real-time. This dashboard can provide an overview of the equipment status, historical performance trends, and upcoming maintenance needs.
- **Alerting and Notification System:** Implement an alerting system within the web or app interface to notify users of potential equipment failures or maintenance requirements. Alerts can be triggered based on predefined thresholds or prediction confidence levels, allowing maintenance teams to take timely action.
- **Predictive Maintenance Scheduler:** Integrate a maintenance scheduling feature into the web or app interface to help users plan and prioritize maintenance activities based on predicted failure probabilities and remaining useful life estimates. This scheduler can optimize maintenance schedules to minimize downtime and maximize equipment availability.
- **Data Input and Integration:** Provide functionality for users to input new sensor data or maintenance records into the system through the web or app interface. Additionally, integrate the predictive maintenance model with existing data management systems or IoT platforms to automatically ingest and analyze real-time sensor data from industrial equipment.
- **User Authentication and Access Control:** Implement user authentication mechanisms and access control features to ensure secure access to the web or app interface. Different user roles, such as maintenance technicians, plant managers, and data analysts, may require different levels of access to the system.



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- Feedback and Reporting: Enable users to provide feedback on maintenance actions taken and update the predictive maintenance model with new information. Generate reports and analytics dashboards within the web or app interface to track equipment performance, maintenance activities, and predictive model accuracy over time.



AI FOR SOCIAL CAUSE

Problem Statement 1: Leveraging AI for Educational Equity and Access

Objective: The objective of this project is to develop AI-powered tools that address educational disparities and provide personalized learning experiences, tutoring, and resource recommendations for underserved communities, ultimately bridging the educational gap.

Problem Statement: Develop AI tools tailored to the specific needs of underserved communities to enhance educational equity and access. The solutions should leverage data from diverse sources, including Kaggle education datasets, UNESCO Institute for Statistics (UIS) data, and anonymized user data from EdTech startups, to address the following key areas:

- **Personalized Learning Experiences:** Create AI-driven platforms that adapt learning content and teaching methodologies based on individual student's learning styles, preferences, and proficiency levels. Utilize data on student performance, engagement, and learning outcomes to provide tailored educational experiences that cater to diverse learning needs.
- **Tutoring and Support Systems:** Develop virtual tutoring systems and support networks powered by AI technologies to provide personalized assistance, feedback, and guidance to students from underserved communities. Incorporate natural language processing (NLP) and speech recognition capabilities to enable interactive tutoring sessions and real-time feedback mechanisms.
- **Resource Recommendations and Access:** Build recommendation engines that curate educational resources, including textbooks, online courses, instructional videos, and learning materials, based on students' interests, academic goals, and learning gaps. Leverage data analytics and machine



learning algorithms to identify high-quality resources and facilitate access to educational content for underserved learners.

- Utilize machine learning algorithms, such as collaborative filtering, content-based filtering, and reinforcement learning, to personalize learning experiences and recommend educational resources.
- Implement natural language processing (NLP) and speech recognition techniques to enable interactive tutoring systems and feedback mechanisms.
- Develop web or mobile-based platforms for delivering AI-powered educational tools, ensuring accessibility and usability for users from diverse backgrounds.

Output: Deliver AI-powered educational tools that offer personalized learning experiences, tutoring, and resource recommendations for underserved communities. Measure the impact of these tools on educational outcomes, engagement rates, and learning achievements to demonstrate their effectiveness in bridging the educational gap and promoting educational equity and access for all.

Web/App - A web application or mobile application is needed for this problem statement.



Problem Statement 2: AI-Based Sports Events Management for Schools at Various Levels.

The problem statement involves implementing artificial intelligence (AI) solutions to streamline sports events management at schools, spanning from the taluka (sub-district) level to the national level. The goal is to leverage AI technologies to enhance the organization, coordination, and efficiency of sports events, ensuring smooth execution and fostering the development of athletic talent at different tiers of competition.

Key Components:

- Event Planning and Scheduling: Develop AI algorithms to assist in the planning and scheduling of sports events at different levels, taking into account factors such as venue availability, participant demographics, and logistical constraints. This includes generating optimized event schedules that minimize conflicts and maximize participation.
- Participant Registration and Tracking: Implement AI-powered systems for participant registration, including online registration portals and automated verification processes. Additionally, develop tracking mechanisms to monitor participant attendance, performance, and eligibility throughout the event duration.
- Resource Allocation and Management: Utilize AI algorithms to allocate resources such as sports equipment, facilities, and personnel efficiently. This involves predicting resource demands based on event specifications and dynamically adjusting allocations to optimize utilization and minimize waste.

Performance Analysis and Feedback: Integrate AI-based performance analysis tools to provide real-time feedback to athletes and coaches during



competitions. This includes techniques such as video analysis, motion tracking, and statistical modeling to assess performance metrics and identify areas for improvement.

- **Safety and Risk Management:** Implement AI systems for monitoring safety protocols and identifying potential risks during sports events. This includes analyzing factors such as weather conditions, crowd behavior, and injury incidents to proactively mitigate risks and ensure the well-being of participants and spectators.

Challenges:

- **Scalability:** Developing AI solutions that can scale effectively to accommodate sports events of varying sizes, from local school competitions to national championships, while maintaining performance and reliability.

- **Data Integration:** Integrating data from multiple sources, including participant registrations, event schedules, and performance metrics, to provide cohesive and comprehensive management solutions.

- **Privacy and Security:** Ensuring the security and privacy of sensitive participant data collected during registration and event management processes, in compliance with data protection regulations.

- **Adaptability to Diverse Sports:** Designing AI systems that are adaptable to a wide range of sports disciplines and competition formats, each with its own unique requirements and dynamics.

DATASET: Sports Events Data:

- **Kaggle:** Kaggle hosts various sports-related datasets, including historical sports event data, schedules, and outcomes.



- **Sports APIs:** Some sports organizations and data providers offer APIs that allow access to real-time and historical sports event data. For example, the ESPN API provides access to sports event schedules and results. Participant Registration Data:-

- **School Sports Departments:** Contact local school sports departments or sports clubs to collect anonymized participant registration data for school-level sports events.

- **Online Registration Platforms:** Explore open datasets or public APIs from online registration platforms used for sports events. Websites like Eventbrite or Meetup may offer access to event registration data.

Performance Metrics Data:-

- **Sports Analytics Platforms:** Websites like ESPN, Sports Reference, or Stathead provide access to sports statistics and performance metrics across various sports disciplines.

- **Open Sports Data:** Open datasets available on platforms like Kaggle or GitHub may contain historical performance data for athletes and teams in different sports.

Venue and Resource Data:-

- **OpenStreetMap (OSM):** OSM offers open geospatial data, including information about sports venues, facilities, and amenities. You can extract relevant data using OSM's API or download pre-processed datasets from third-party sources.

Safety and Risk Data:-

- **Government Agencies:** Check with local government agencies or emergency services



departments for datasets related to safety protocols, risk assessments, and incident reports for sports events.

- **Public Safety Databases:** Some cities or regions maintain public safety databases containing information about incidents, accidents, and emergency responses, which may include data relevant to sports events.

Weather and Environmental Data:

- **NOAA Climate Data Online:** The National Oceanic and Atmospheric Administration (NOAA) offers free access to historical weather data through its Climate Data Online (CDO) platform.

- **OpenWeatherMap:** OpenWeatherMap provides APIs and datasets containing weather forecasts and historical weather data for locations worldwide.

Historical Trends and Market Research:-

- **Google Scholar:** Search for academic publications and research studies on sports events management, participant demographics, and market trends. Many research papers are freely available for download.

- **Industry Reports:** Look for free industry reports and market analyses on sports events management, fan engagement, sponsorship trends, and sports industry outlooks from reputable sources like sports industry associations or market research firms.

Web/app - A web application or mobile application is needed for this problem statement.



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By addressing these challenges and leveraging AI technologies, the proposed solution aims to revolutionize sports events management at schools, empowering organizers, coaches, and athletes with tools and insights to enhance the quality and competitiveness of sports events at various levels.



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IOT

Problem Statement: PASSIVE WAYS OF IDENTIFYING

- Number of people present in a room (Total count) sitting in front of a TV set
- Identify the Gender (Male/Female)
- Identify the Age (in Years)

While proposing and working on a solution, following areas to be considered:

1. Non camera based solution – Privacy concerns
2. Non voice based – As this again is an active way of identifying key words