Problem statements

Problem Statement 1: Airborne Threat Detection in Surveillance Videos

Introduction:

In modern security and defense operations, timely and accurate detection of airborne threats is crucial. Traditional surveillance methods often rely on manual monitoring, which is inefficient, prone to human error, and struggles with differentiating between harmless objects like birds and potential threats such as drones or missiles.

Our solution aims to revolutionize airborne threat detection using advanced object detection frameworks. By leveraging AI-driven classification and trajectory prediction, we enhance threat identification while minimizing false alarms. This automated approach ensures rapid response and improved security in diverse operational environments, including low-light and night-vision conditions.

Solution Expected:

Our solution provides a cutting-edge airborne threat detection system that integrates advanced AI capabilities to enhance surveillance effectiveness and security.

Objective:

The primary goal of this phase is to train an AI model that can automatically detect and classify airborne objects, such as birds, drones, and missiles, from surveillance video footage. The challenge is to accurately distinguish between real threats (drones/missiles) and non-threatening objects (birds) while ensuring high-speed performance to avoid unnecessary delays in detection.

Key Steps in Round 1:

1️⃣ Training an AI Model on Surveillance Footage

- The AI model will be trained using 30-minute video clips containing instances of birds, drones, and missiles.
- The dataset should include diverse conditions (e.g., different backgrounds, lighting scenarios, object speeds) to improve generalization.

2️⃣ Implementing Object Detection Frameworks

- The model will be trained to detect, classify, and count the airborne objects detected in the surveillance footage.

3️⃣ Prioritizing High-Speed Inference to Reduce False Alarms

- One of the biggest challenges in airborne threat detection is the high rate of false alarms caused by birds.

4️⃣ Employing Optimized Detection Models for Accuracy

- Fine-tune the AI model using transfer learning from pre-trained models on object detection tasks.
- Apply data augmentation techniques to improve accuracy in different scenarios (e.g., changing background, lighting variations, motion blur).

Key Steps in Round 2

1️⃣ Trajectory Analysis and Prediction

Implement movement pattern analysis to distinguish natural flight patterns (birds) from mechanical movements (drones/missiles).

Develop predictive algorithms to forecast object trajectories for early threat assessment.

Integrate velocity and acceleration metrics to classify objects based on movement characteristics.

2️⃣ Multi-Sensor Data Fusion

Combine video data with other sensor inputs (radar, infrared, acoustic) for enhanced detection accuracy.

Develop a unified processing framework to correlate data from multiple sources in real-time.

Implement cross-validation techniques to reduce false positives through multi-sensor confirmation.

3️⃣ Threat Prioritization System

Develop an automated risk assessment algorithm that assigns threat levels based on object type, trajectory, speed, and proximity to sensitive areas.

Create customizable alert thresholds for different security contexts and operational environments.

Implement tiered response protocols based on calculated threat levels.

Expectation: We anticipate that our innovative examination system will redefine the assessment landscape by offering unparalleled flexibility, efficiency, and security. By incorporating cutting-edge technologies and user-centric design principles, we aim to streamline the examination process, enhance student engagement, and improve the overall assessment experience for both institutes and students.

Conclusion: In conclusion, our comprehensive examination system represents a significant step forward in the evolution of assessment methodologies. By addressing the limitations of traditional processes and introducing advanced features such as multiple question formats, AI proctoring, and instant results, we are poised to revolutionize the way exams are conducted and evaluated. We are confident that our platform will empower institutes to deliver more effective assessments, foster academic integrity, and ultimately drive positive outcomes for students and educators alike.

By integrating AI-powered automation, predictive analytics, and robust UI design, our system enhances airborne threat detection, reduces operational burden, and ensures higher security standards in surveillance operations.

Problem Statement2: UI Component Designer with AI Integration

Introduction:

Designing user interfaces (UI) is a critical aspect of software development, but traditional methods often involve repetitive tasks, limited customization, and lack of collaboration. Developers and designers face challenges in creating responsive, visually appealing, and functional UIs efficiently. To address these issues, we introduce an innovative UI Component Designer Platform that leverages AI to revolutionize the way UIs are designed, customized, and deployed.

Solution Expected:

Our platform is a web or desktop-based tool that enables users to create, customize, and preview user interfaces through an intuitive drag-and-drop interface. With AI-powered suggestions, the platform ensures efficiency and collaboration. It caters to designers, developers, and businesses seeking to streamline UI development while maintaining high-quality standards.

Unique Selling Points and Features:

Round 1: Core Features

Drag-and-Drop UI Editor:

- Users can add, arrange, and resize elements like buttons, text fields, images, and forms.
- Components support basic styling options (e.g., color, font size, borders) and advanced customization.

Real-Time Preview Mode:

- Instantly preview and interact with the designed interface within the platform.
- Ensure all component functionalities work as intended in the preview.

AI-Powered Design Suggestions:

- AI analyzes user designs and suggests improvements for layout, color schemes, and accessibility.
- Automatically generate responsive designs for different screen sizes (desktop, tablet, mobile).

Component Library:

- A library of pre-made components (e.g., modals, navigation bars, input forms) that users can drag into their designs.
- Allow users to customize or extend these components.

Round 2: Advanced Features

Export as Standalone Web App:

- Allow users to export their designs as fully functional web applications.
- Export app configurations in a structured format like JSON for future edits or third-party use.

AI-Driven Code Generation:

- Automatically generate clean, optimized code (HTML, CSS, JavaScript) based on the designed UI.
- AI ensures cross-browser compatibility and adherence to best practices.

Project Management System:

- Enable users to save, load, and edit their UI projects.
- Implement versioning to let users revert to previous iterations.

Collaboration Tools:

- Multiple users can work on the same project in real-time with synchronized changes.
- Role-based access control ensures secure collaboration.

Expectation:

We anticipate that our UI Component Designer Platform will significantly reduce the time and effort required to create high-quality user interfaces. By integrating AI, the platform will enhance collaboration, ensure design integrity, and provide advanced customization options. This will empower designers and developers to focus on creativity and innovation, ultimately leading to better user experiences and faster project delivery.

Conclusion:

In conclusion, our UI Component Designer Platform represents a paradigm shift in how user interfaces are designed and developed. By leveraging AI, we aim to set a new standard for UI design tools, offering unparalleled efficiency and ease of use. We look forward to empowering designers and developers to create exceptional UIs with confidence.

ps3:Enhancing Clinical Decision Support Systems with Retrieval-Augmented Generation (RAG) Model

Problem Statement:

Healthcare professionals often struggle to access accurate, real-time, and relevant medical information for critical decision-making. Traditional Clinical Decision Support Systems (CDSS) rely on static databases and predefined rules, limiting their adaptability to evolving medical research and treatment protocols. Key challenges include:

- Difficulty in retrieving patient-specific insights from vast structured and unstructured medical data.
- Lack of real-time integration with the latest research papers, guidelines, and case studies.
- Cognitive overload due to excessive medical literature.
- Inconsistent accuracy in diagnosis recommendations, leading to medical inefficiencies.

Solution Expected:

Our system leverages Retrieval-Augmented Generation (RAG) to combine retrieval models for fetching relevant medical information with generative AI for context-aware clinical recommendations. This system will:

- Retrieve up-to-date research papers, clinical guidelines, and case studies.
- Integrate structured EHR data with retrieved insights for patient-specific recommendations.
- Provide real-time, evidence-based suggestions to healthcare professionals.
- Improve diagnostic accuracy while reducing cognitive load.

Unique Selling Points and Features:

Round 1: Core Features

Data Collection & Processing:

- Extract structured patient data from Electronic Health Records (EHRs).
- Scrape and preprocess unstructured data from medical research repositories (PubMed, WHO, FDA).
- Store and retrieve data efficiently using vector databases.

AI-Powered Clinical Decision Support:

- Fine-tuned retrieval models to fetch relevant medical information.
- Generative AI (e.g., GPT-4) to contextualize and summarize retrieved data.

- Named Entity Recognition (NER) to extract medical conditions, drugs, and treatment suggestions.

Round 2: Advanced Features

Personalized Patient Insights:

- Context-aware response generation integrating real-time patient vitals and historical data.
- Predictive analysis for early disease detection and risk assessment.

Database & Machine Learning:

- Maintain a historical database of medical case studies and treatment outcomes.
- Use transformer-based NLP models (e.g., BERT, RoBERTa) for medical text classification.
- Implement ensemble models for enhanced diagnostic accuracy.

Automated Risk Scoring & Alerts:

- Assign risk scores to suggested treatments based on past outcomes and guidelines.
- Provide real-time alerts for critical health conditions.
- Seamlessly integrate with hospital IT infrastructures for automated responses.

Expectation:

By implementing this AI-powered Clinical Decision Support System, healthcare professionals can make more accurate, informed, and efficient decisions. The system will enhance diagnostic precision, reduce medical errors, and streamline patient management.

Conclusion:

In conclusion, our RAG-based Clinical Decision Support System revolutionizes healthcare by bridging the gap between static knowledge bases and real-time medical intelligence. By integrating AI-driven retrieval and generation, this system empowers clinicians with reliable, up-to-date, and personalized recommendations, ultimately improving patient outcomes and medical efficiency.

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Problem statement 4: Deepfake & Social Engineering Attack Detector

Introduction:

Deepfake technology is increasingly being exploited for social engineering attacks such as voice phishing, business email compromise (BEC), and fake video authentication. These threats pose significant risks to individuals and organizations, making it crucial to develop an AI-powered fraud detection system to identify and prevent deepfake-based attacks effectively.

Solution Expected:

Our platform is a browser/desktop extension that scans and detects deepfake content in real-time across various communication channels, including video calls, emails, and social media. By leveraging AI-driven media analysis, the system ensures accurate detection and provides users with actionable insights to mitigate security risks.

Unique Selling Points and Features:

Round 1: Core Features

Client-Side Detection:

- Monitor and analyze audio/video calls on platforms like Zoom, Teams, and WhatsApp.
- Scan emails for impersonation attempts and phishing attacks.
- Detect fake profiles and fraudulent messages on social media.

AI-Powered Media Analysis:

- Facial Landmarks & Lip Sync Analysis to identify video tampering.
- Voice Biometrics & MFCC Analysis to detect synthetic speech.
- NLP-based Linguistic Analysis to recognize phishing patterns in emails.

Round 2: Advanced Features

Deepfake Detection Models:

- CNNs + Optical Flow Analysis to identify frame inconsistencies in manipulated videos.
- WaveNet & Spectrogram-based CNNs for detecting AI-generated speech.
- BERT-based NLP models to detect impersonation patterns in text.

Database & Machine Learning:

- Maintain validated deepfake samples and synthetic media datasets from sources like Kaggle, Celeb-DF, and DFDC.
- Supervised learning: Train deep learning models on real vs. AI-generated content.
- Unsupervised learning: Detect out-of-distribution fake content using autoencoders.

User Alerts & Reports:

- Provide real-time alerts when deepfake content is detected.
- Display confidence scores for media authenticity, ensuring users make informed decisions.

Expectation:

We anticipate that our Deepfake & Social Engineering Attack Detector will significantly enhance cybersecurity by identifying deepfake threats before they cause harm. The AI-driven approach will improve detection accuracy, safeguard personal and business communications, and offer seamless integration across various platforms.

Conclusion:

In conclusion, our AI-powered fraud detection system sets a new standard in deepfake prevention. By combining cutting-edge deep learning models with real-time analysis, we empower users to detect and mitigate deepfake-based social engineering attacks with confidence and efficiency.

Problem statement 5: Ransomware Early Detection & Response System

Introduction:

Ransomware is one of the most damaging cyber threats, leading to encrypted files and financial extortion. Traditional security measures often fail to detect ransomware attacks before encryption completes, making early detection crucial. This project aims to build an AI-driven ransomware detection and prevention system that identifies attacks in real-time and mitigates their impact.

Solution Expected:

Our system is a real-time monitoring agent designed to detect and respond to ransomware threats before they cause significant damage. By analyzing file and process behavior, it provides proactive alerts and automated responses to neutralize potential attacks before encryption completes.

Unique Selling Points and Features:

Round 1: Core Features

Client-Side Monitoring:

- Detect unusual file encryption patterns and mass renaming/deletion of files.
- Monitor unauthorized process execution, including PowerShell, cmd, and wmic abuse.
- Analyze system behavior to detect potential ransomware activity in real-time.

AI-Powered Threat Detection:

- Identify file entropy changes, which indicate ransomware modifying file structures.
- Track process API calls related to cryptographic operations and shadow copy deletion.
- Detect registry modifications commonly associated with ransomware attacks.

Round 2: Advanced Features

Behavior-Based ML Threat Classification:

- LSTMs/Transformers to detect long-term behavioral anomalies in system activity.
- Isolation Forests & One-Class SVM to identify deviations from normal process behavior.

Database & Machine Learning:

- Maintain a database of known ransomware families and Indicators of Compromise (IOC) from security firms like VirusTotal and AnyRun.
- Utilize ensemble models combining signature-based and anomaly detection techniques.
- Train deep learning models to recognize encryption patterns using RNNs and LSTMs.

Automated Response System:

- Provide real-time alerts when ransomware activity is detected.
- Automatically kill malicious processes, block network access, and quarantine infected files.
- Display risk scores and recommended mitigation strategies for affected users.

Expectation:

We anticipate that our Ransomware Early Detection & Response System will significantly reduce the impact of ransomware attacks by identifying threats before encryption completes. By leveraging AI-driven anomaly detection, it ensures proactive security and minimizes data loss for individuals and organizations.

Conclusion:

In conclusion, our AI-powered ransomware detection system sets a new benchmark in cybersecurity. By combining advanced behavioral analysis, real-time monitoring, and automated threat response, we empower users to protect their data from ransomware attacks efficiently and effectively.

Problem statement 6: OSINT-Based Dark Web Threat Intelligence Platform

Introduction:

Organizations struggle to monitor leaked credentials, vulnerabilities, and cyberattack planning on the dark web. Traditional security measures fail to track hidden threats in underground forums and encrypted networks. This project focuses on building an OSINT-based intelligence tool that crawls hacker forums, TOR websites, and data leak dumps to provide actionable threat intelligence.

Solution Expected:

Our system is a web-based intelligence platform that continuously monitors and analyzes dark web activities. By leveraging advanced NLP and graph-based analytics, it detects leaked credentials, cyberattack discussions, and emerging threats in real-time, helping security teams stay ahead of potential risks.

Unique Selling Points and Features:

Round 1: Core Features

Dark Web Crawling & Data Collection:

- Scrape and analyze TOR-based hacker forums, breach databases, and underground marketplaces.
- Monitor paste sites for leaked credentials and stolen data.
- Track cybercrime discussions in real-time to detect emerging threats.

AI-Powered Threat Intelligence:

- Named Entity Recognition (NER) to extract sensitive information such as usernames, passwords, and emails.
- BERT-based Topic Modeling to classify discussions into categories like hacking, exploits, and scams.
- Sentiment Analysis on hacker conversations to detect planned cyberattacks.

Round 2: Advanced Features

Graph-Based Threat Actor Analysis:

- Utilize Graph Neural Networks (GNNs) to map relationships between threat actors.
- Identify key influencers and their roles in cybercrime networks.
- Detect connections between multiple data breaches and emerging attack trends.

Database & Machine Learning:

- Maintain a historical database of leaked credentials and hacker activities.
- Use transformer-based NLP models like BERT and RoBERTa for advanced text classification.
- Implement anomaly detection to identify new and evolving cyber threats.

Automated Risk Scoring & Alerts:

- Assign risk scores to detected threats based on their impact level.
- Provide real-time alerts to security teams for immediate response.
- Integrate with security platforms for automated incident response and threat mitigation.

Expectation:

By implementing this OSINT-based Dark Web Threat Intelligence Platform, organizations can proactively detect and respond to cyber threats before they escalate. This system provides deep insights into hacker activities, helping security teams prevent data breaches, financial fraud, and cyberattacks.

Conclusion:

In conclusion, our AI-powered dark web monitoring system revolutionizes cybersecurity by delivering real-time intelligence and risk analysis. By combining NLP, machine learning, and OSINT techniques, we empower organizations to safeguard their assets from hidden cyber threats effectively.

Problem Statement 7: Blood Donation & Emergency Help

Introduction:

During medical emergencies, finding a compatible blood donor or receiving immediate assistance can be a life-or-death situation. Many patients struggle to access blood due to shortages, delays, or reliance on middlemen. This platform aims to directly connect blood donors with recipients based on location, ensuring timely donations and emergency support without unnecessary delays.

Solution Expected:

Our platform is a mobile and web-based application that facilitates real-time blood donation matching and emergency assistance. By leveraging location-based services, donor availability tracking, and real-time notifications, the system ensures rapid response times, directly linking donors, recipients, and emergency responders.

Unique Selling Points and Features:

Round 1: Core Features

1. Blood Request System:

- Users can request blood by specifying blood type, urgency level, and hospital location.
- Requests are broadcasted to nearby potential donors, increasing response rates.
- A request tracking system allows real-time monitoring of request status.

2. Location-Based Donor Matching:

- The system finds and notifies nearby registered donors matching the required blood type.
- Donors can accept or decline requests based on availability.
- Prioritization of closest available donors ensures minimal travel time.

3. Emergency SOS Alerts:

- An SOS button allows users to instantly notify nearby volunteers, emergency contacts, or responders.
- Alerts include live location and details about the emergency.
- Responders can accept SOS requests and provide assistance.

4. Blood Bank Inventory Integration:

- Integration with hospitals and blood banks provides real-time blood stock availability.
- If no direct donors are available, users can check nearby blood banks for required blood types.

5. Donor Availability Status:

- Donors can update their status (Available/Unavailable) at any time.
- Only active donors receive urgent blood requests, reducing unnecessary notifications.

Round 2: Advanced Features

1. AI-Based Urgency Prioritization:

- Requests are ranked based on blood type rarity, distance, and urgency.
- The system prioritizes critical cases to ensure faster response times.

2. Emergency Medical Response Integration:

- Direct connection with hospitals, ambulance services, and first responders.
- Users can request medical assistance or ambulance services during emergencies.

3. Live Donor Tracking:

- Once a donor accepts a request, recipients can track their live location.
- Helps recipients plan their arrival at the hospital or donation center.

4. Gamification & Leaderboard:

- A points-based system rewards donors for successful donations.
- Leaderboards display top donors to encourage participation and community engagement.

Expectation:

We anticipate that our Blood Donation & Emergency Help platform will revolutionize the way blood donation and emergency response are handled. By eliminating delays and providing a seamless donor-recipient connection, the system will save lives, increase donor participation, and improve accessibility to emergency medical assistance.

Conclusion:

In conclusion, our platform leverages advanced technology, real-time data, and AI-driven prioritization to create an efficient, reliable, and lifesaving blood donation and emergency support system. By fostering a community-driven approach, we ensure that those in need receive timely help, making a tangible impact on public healthcare and emergency response.

Problem Statement 8: Direct Farmer-to-Consumer Marketplace

Introduction: Farmers often struggle to get fair prices for their produce due to middlemen who take a large share of the profit. This platform aims to eliminate intermediaries by enabling direct connections between farmers, consumers, and retailers. Through a user-friendly mobile application, farmers can list their produce, negotiate prices, manage orders, and receive payments seamlessly. The platform should ensure transparency, real-time communication, and accessibility to a larger customer base, helping farmers increase their income while ensuring fresh produce reaches buyers at reasonable prices.

Solution Expected: Our platform is a mobile and web-based application that enables farmers to directly connect with consumers and retailers. By integrating location-based buyer matching, direct messaging, and an intuitive order management system, the platform ensures efficiency and fairness in agricultural trade.

Unique Selling Points and Features:

Round 1: Core Features

1. Farmer Profile & Product Listings

- Farmers can create profiles and list available produce, including details such as price per unit, available quantity, and expected harvest date.
- Image uploads and descriptions help attract buyers.
- An easy-to-use interface allows farmers to update stock availability in real-time.

2. Location-Based Buyer Matching

- The system suggests nearby buyers or retailers based on the farmer's location.
- Buyers searching for specific produce see a list of farmers offering it within their preferred radius.
- Reduces transportation costs and ensures fresher products reach consumers.

3. Direct Messaging for Negotiation

- In-app messaging system enables buyers and farmers to discuss pricing, quantity, and delivery preferences.
- Supports text and voice messages for inclusivity.
- Pre-set message options simplify negotiations.

4. Order Placement & Confirmation

- Buyers can browse, place orders, and specify quantities.
- Farmers receive notifications and can accept or reject orders.
- Order tracking system updates users on status changes (pending, confirmed, dispatched, delivered).

Round 2: Advanced Features

1. AI-Based Price Recommendation

- Analyzes supply, demand, and market trends to suggest fair prices.
- Helps farmers maximize sales with competitive pricing.
- Indicates whether a product is fairly priced for buyers.

2. Bulk Order & Wholesale Support

- Supports large-scale buyers such as grocery stores and restaurants.
- Farmers can offer wholesale pricing or bulk order discounts.
- Minimum order quantity options help manage sales efficiently.

3. Logistics & Delivery Integration

- Farmers can either handle their own deliveries or use integrated third-party logistics.
- Buyers can track delivery status in real-time.
- Ensures smooth transactions and timely deliveries.

4. Smart Inventory Management

- Farmers can track available stock dynamically.
- Low-stock alerts notify farmers when items are about to run out.
- Automatic "Out of Stock" updates prevent unavailable orders.

Expectation: We anticipate that our Direct Farmer-to-Consumer Marketplace will significantly reduce dependency on middlemen, increase farmers' earnings, and provide consumers with fresh, affordable produce. By leveraging technology, AI-driven pricing, and real-time buyer matching, the system ensures a fair and transparent agricultural trade ecosystem.

Conclusion: In conclusion, our platform aims to revolutionize agricultural sales by providing instant, location-based buyer matching and direct farmer-to-consumer transactions. Through AI-powered pricing, real-time messaging, and smart inventory management, we ensure a sustainable and efficient marketplace for both farmers and buyers.

Problem statement: 9 DecentralGig: Blockchain-Powered Freelance Marketplace

Introduction:

The freelance marketplace has evolved significantly, yet centralized platforms like Fiverr impose high fees, enforce strict policies, and control user data, limiting the freedom and financial benefits of freelancers. Additionally, disputes are often resolved unfairly, and users have limited transparency in payment processing. To address these challenges, we propose a decentralized freelance marketplace, leveraging blockchain technology to ensure transparency, reduce fees, and provide users with true ownership over their work and payments.

Solution Expected:
Our platform is a Web3-based decentralized freelance marketplace where freelancers can list services, and clients can hire them using smart contracts. Payments are securely held in escrow and automatically released upon task completion. Dispute resolution is managed through a Decentralized Autonomous Organization (DAO), ensuring fairness. Additionally, decentralized identities (DIDs) and reputation systems prevent fraud while maintaining user privacy.

Unique Selling Points and Features:
Round 1: Core Features
Smart Contract-Based Payments:

Clients deposit funds into a smart contract escrow.
Payment is released automatically upon task completion.
Supports milestone-based payments.
Decentralized Identity & Reputation System:

User profiles are stored on a blockchain to prevent manipulation.
Reputation is built over time and remains verifiable.
Zero-Knowledge Proofs (ZKPs) enable work verification without revealing personal details.
Dispute Resolution via DAO Arbitration:

Users can stake tokens to become arbitrators.
Arbitrators vote on disputes and earn rewards for fair decisions.
Reduces biased and inefficient dispute handling.
Round 2: Advanced Features
P2P Communication & Privacy Protection:

Secure peer-to-peer messaging for freelancer-client discussions.
Job listings stored on IPFS/Arweave for decentralization.
Cross-Chain Payments & Fiat On-Ramps:

Supports Ethereum, Polygon, Solana, and other chains.

Enables easy fiat-to-crypto conversion for onboarding new users.
Minimal Fees & Governance:

No high commission cuts—only minimal protocol fees.
Community governance through DAO voting to propose and implement changes.

Expectation:

We anticipate that our decentralized freelance marketplace will revolutionize the gig economy by eliminating intermediaries, reducing costs, and increasing transparency. By leveraging blockchain technology, freelancers and clients can transact with greater security, privacy, and fairness. The integration of smart contracts, DID, and DAO arbitration ensures a trustless and self-sustaining ecosystem where users have full control over their work and earnings.

Conclusion:

In conclusion, our decentralized freelance marketplace represents a paradigm shift in how freelancing platforms operate. By leveraging Web3 technology, we empower freelancers and clients with a fair, low-cost, and censorship-resistant platform. This initiative aims to set a new standard for freelancing, ensuring that talent and hard work are rewarded without interference from centralized authorities.

Problem Statement10: Identification of Personally Identifiable Information (PII) in Documents and Data

Introduction: In today's digital age, numerous services require users to upload government-issued documents or provide personal data for verification and processing. These documents, such as Aadhaar card, PAN card, driving license, and credit card details, contain personally identifiable information (PII) that can uniquely identify an individual. The inadvertent or intentional exposure of PII poses significant risks, including identity theft, financial fraud, and privacy breaches. Organizations handling such documents must ensure secure data management practices, including storage, encryption, access control, and compliance with data protection regulations.

Solution Expected: A software application or library package that detects and alerts users when PII from government-issued identification documents is embedded in uploaded documents or provided data. The application will help organizations verify the necessity of retaining such PII, enabling them to redact, mask, or remove it when not required. Additionally, it will notify users of potential privacy risks before submitting sensitive information.

Unique Selling Points and Features:

Round 1: Core Features

1. PII Detection in Uploaded Documents

- Automatically scans uploaded documents for Aadhaar, PAN, driving licenses, and other PII-related data.
- Uses OCR and machine learning models to identify sensitive information.
- Provides a risk assessment score for detected PII content.

2. Real-Time User Alerts

- Notifies users before submitting documents containing PII.
- Displays recommendations on whether to proceed with uploading or redact sensitive details.
- Ensures users make informed decisions regarding data privacy.

3. Data Redaction and Masking

- Allows organizations to remove or blur sensitive data from documents.
- Ensures compliance with privacy laws by limiting exposure of unnecessary PII.
- Supports multiple document formats, including PDF, JPEG, and PNG.

4. Compliance and Audit Logs

- Maintains logs of PII detection events for auditing purposes.
- Helps organizations track compliance with data protection regulations.

- Provides an admin dashboard for reviewing past detections.

(Bonus)

5. User Consent & Policy Enforcement

- Ensures users acknowledge data privacy policies before uploading sensitive documents.
- Helps organizations enforce best practices for PII handling.
- Reduces the risk of unauthorized data exposure.

6. Multi-Language OCR Support

- Detects and processes PII across different languages.
- Expands accessibility for diverse user demographics.
- Supports regional government-issued documents.

7. Secure API Integration

- Allows businesses to integrate PII detection into their platforms.
- Provides a secure API for automated scanning and alerting.
- Enables seamless adoption across various digital services.

Round 2: Advanced Features

1. AI-Driven PII Classification

- Categorizes PII types (e.g., financial, identity, contact information).
- Helps organizations implement customized redaction strategies.
- Improves detection accuracy over time through AI training.

2. Batch Document Processing

- Supports bulk scanning of documents for large enterprises.
- Enhances efficiency for compliance checks and risk mitigation.
- Enables organizations to assess PII risks at scale.

3. Blockchain-Based Audit Trails

- Logs PII detection events securely on a blockchain.
- Ensures tamper-proof records for legal and regulatory compliance.
- Enhances transparency and trust in data handling practices.

4. PII Removal Recommendations

- Suggests best practices for anonymization based on context.
- Guides users on when and how to redact unnecessary details.
- Enhances data security without compromising service functionality.

Expectation: We anticipate that our PII identification and redaction application will significantly enhance data privacy, reduce compliance risks, and improve operational efficiency for organizations handling sensitive documents. By leveraging AI-driven detection, real-time alerts, and secure redaction mechanisms, the system ensures robust protection of personally identifiable information.

Conclusion: Our platform aims to create a safer digital environment by enabling users and organizations to detect and manage PII effectively. Through AI-powered classification, multi-language support, and blockchain-based audit trails, we provide a comprehensive solution for ensuring compliance with privacy regulations and mitigating data security risks.

Problem Statement11: Humanitarian Crisis Relief and Support App

Introduction: In an increasingly interconnected world, humanitarian crises—such as natural disasters, conflicts, and pandemics—demand swift action and support. However, challenges like misinformation, lack of transparency in donations, and difficulties in mobilizing resources hinder relief efforts. This mobile application aims to address these issues by providing real-time crisis updates, secure and transparent donation processing, and awareness campaigns to educate and engage users. By ensuring accountability and security, the platform will serve as a reliable source of information and a bridge between donors, NGOs, and affected communities.

Solution Expected: A mobile application that provides real-time crisis updates, enables secure donations, ensures transparency in fund distribution, and raises awareness through educational campaigns. It will incorporate AI-powered crisis prediction, decentralized fund management, and a volunteer network to enhance humanitarian response.

Unique Selling Points and Features:

Round 1: Core Features

1. Real-Time Crisis Information

- Integrates official data sources (UN, WHO, Red Cross, government agencies) for accurate updates.
- Displays interactive crisis maps highlighting affected areas.
- Categorizes crises based on type (natural disaster, humanitarian conflict, pandemic, etc.).
- Enables push notifications for urgent crisis alerts.

2. Donation Management

- Implements secure payment gateways (Stripe, Razorpay, Google Pay, PayPal) for seamless transactions.
- Allows users to donate to specific causes or organizations.
- Provides instant digital receipts and confirmation of donations.

3. Transparency and Accountability

- Displays real-time fund distribution reports through visual dashboards.
- Partners with NGOs to share updates on how donations are utilized.
- Implements blockchain-based tracking for transparent fund allocation.

4. Awareness Campaigns

- Creates engaging multimedia content (blogs, videos, infographics) to educate users on crises.
- Runs interactive social campaigns encouraging donations and volunteer participation.

- Gamifies engagement by awarding badges for frequent donors or campaign sharers.

5. User Authentication and Security

- Implements OTP/email-based authentication for secure logins.
- Uses two-factor authentication (2FA) for financial transactions.
- Encrypts user data and payment details to prevent breaches.

Round 2: Advanced Features

1. AI-Powered Crisis Prediction

- Utilizes machine learning models to predict future crises based on historical data and current trends.
- Alerts NGOs and users in high-risk regions before a crisis escalates.

2. Decentralized Fund Distribution

- Implements smart contracts on a blockchain to ensure automatic, tamper-proof distribution of funds to verified NGOs.
- Allows users to track donations end-to-end for transparency.

3. Emergency Volunteer Network

- Enables users to sign up as volunteers and get notified of relief efforts in their location.
- NGOs can recruit volunteers based on skill sets and proximity to affected areas.

4. Community Support Forum

- Introduces a social space where users can discuss crises, share real-time updates, and offer assistance.
- Enables NGOs to post emergency requests and receive direct support from users.

5. Multi-Language Support

- Provides language customization for a global audience.
- Uses AI-powered translation to ensure inclusivity in crisis updates and communications.

6. Offline Mode for Crisis Zones

- Allows users in affected regions to access vital information and resources even without an internet connection.
- Uses SMS-based alerts for users in network-restricted areas.

7. Augmented Reality (AR) for Awareness

- Develops an AR experience to visualize the impact of crises (e.g., flood simulation, refugee camp conditions).
- Encourages empathy and engagement by letting users interact with crisis scenarios virtually.

Bonus Features

- **Crowdsourced Crisis Reporting** – Users can report incidents with location-based proof.
- **Charity Rating System** – Users can rate and review NGOs based on credibility.
- **Automated Voice Assistance** – AI-powered voice support for visually impaired users.

Expectation: This platform aims to enhance humanitarian response efforts by integrating real-time crisis monitoring, secure and transparent donations, and AI-powered predictive analytics. By providing a trusted ecosystem for crisis relief, the application will empower donors, volunteers, and NGOs to collaborate effectively.

Conclusion: Our solution seeks to revolutionize crisis response and humanitarian aid by leveraging technology for improved coordination, transparency, and user engagement. Through AI, blockchain, and community-driven initiatives, we envision a world where timely support reaches those in need efficiently and securely.