IMPACTX 2.0
Sense Of Innovation, Versatility, And Possibility
The Continuation

TITLE PAGE

Problem Statement Title- INVENTORYPRO

Theme -Smart and Safe Mobility for Sustainable Communities

Team Name - Mixed Signal

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MIXED SIGNAL

"RoadSafe AI: Driving Innovation for Safer, Smarter Roads"

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Problem statement

Chennai faces critical road safety challenges, such as frequent accidents at hotspots like Mount Road and Anna Salai, severe congestion in areas like T. Nagar and Koyambedu during peak hours, delayed emergency response times, and inadequate pedestrian infrastructure. The lack of proper cyclist safety measures, unreported hazards like waterlogged roads during monsoons, and inefficient parking management worsen the city's road safety issues.

Chennai road safety issues include:

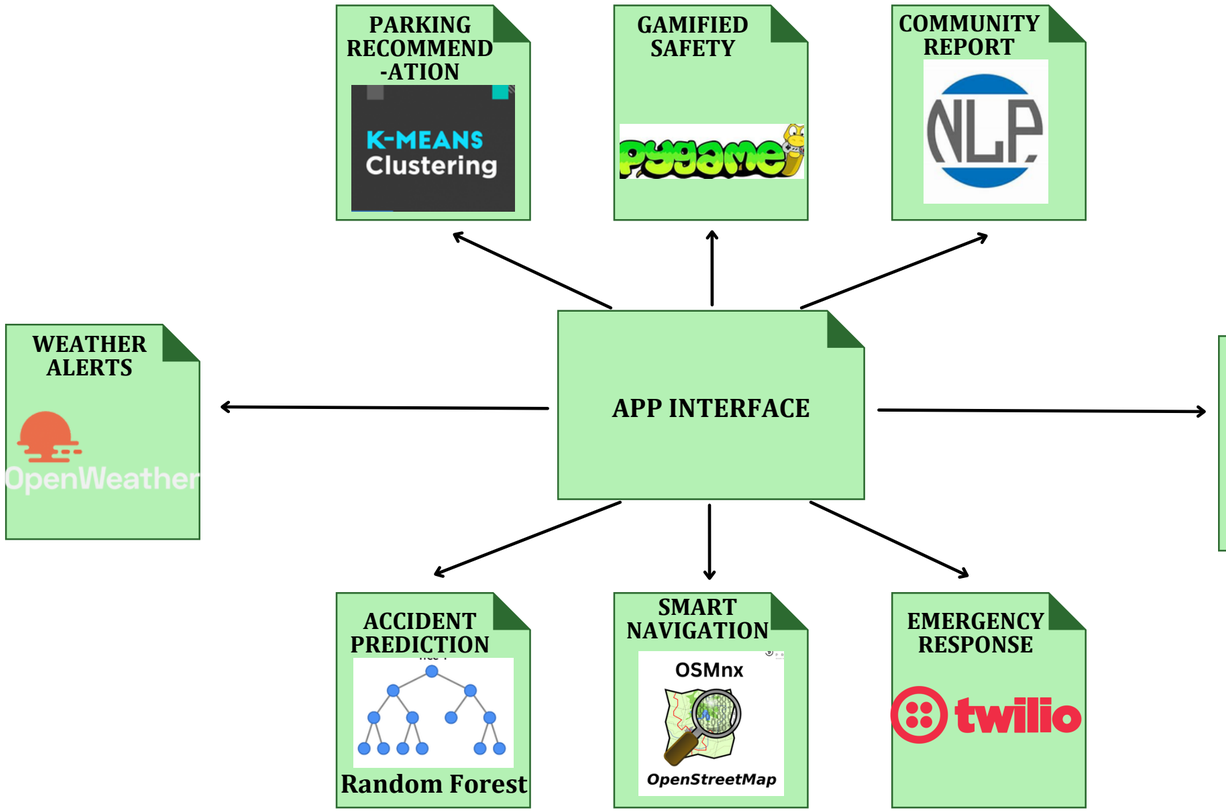
- **Accident Hotspots:** Over 25 high-risk zones like Mount Road and Kathipara Junction record frequent accidents, with up to 50 incidents annually in some areas.
- **Traffic Congestion:** Peak hour delays in Koyambedu and T. Nagar slow traffic to below 10 km/h, causing long commute times and pollution.
- **Pedestrian Risks:** 30% of road fatalities involve pedestrians and cyclists due to inadequate infrastructure in areas like Parry's Corner and Velachery Main Road.

Solution

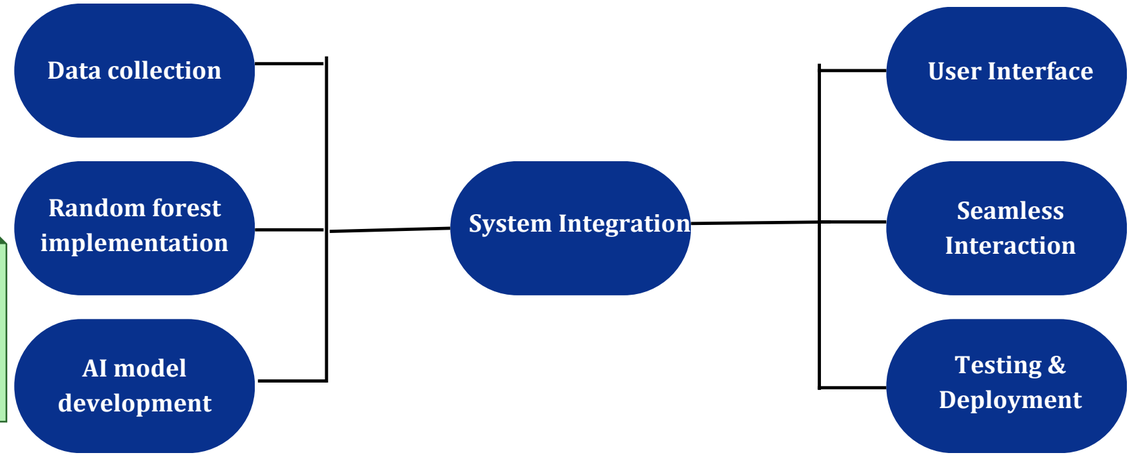
- **Smart Navigation System:** Provides the shortest path, predicts traffic congestion and accident hotspots, and offers road alerts with voice and read features.
- **AI Chatbot Guide:** Acts as a navigation assistant, offers location-based suggestions, replies with voice/read features, and customizes recommendations using the user's current location.
- **Parking Recommendation:** Suggests nearby parking zones, enables pre-booking, and provides a separate portal for parking authorities to manage bookings.
- **Accident Detection:** Utilizes AI/ML models with CCTV to detect collisions and notify relevant authorities in real-time.
- **Emergency & Community Alerts:** Allows users to press an emergency button when feeling unsafe during travel or to report hazards like flooding or potholes. Authorities can respond promptly through a dedicated management system.
- **Gamified Awareness:** Promotes safety awareness via games, rewards users with redeemable points for services (e.g., parking, car washes, fuel), and awards points for community reporting.
- **Wearable Device Alerts:** Monitors driver vitals (e.g., heart rate) through wearable devices, detects anomalies, and issues real-time safety alerts.

TECHNICAL APPROACH

Architecture :



METHODOLOGY:



Prototype YT Link

https://youtu.be/U7kq2TleKl8

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INNOVATION:

- **AI-Integrated CCTV Accident Detection:** Uses AI/ML with CCTV for real-time collision detection and instant emergency response, improving safety and speed.
- **Wearable Driver Health Monitoring:** Monitors driver vitals (e.g., heart rate) to proactively detect health risks while driving, a feature missing in typical navigation apps.
- **Dual Emergency & Community Alerts:** Combines emergency reporting and hazard alerts (e.g., potholes) for a collaborative road safety approach.
- **Gamified Safety Rewards:** Incentivizes users with redeemable points for reporting hazards and playing safety games, making safety engaging.
- **Pre-Bookable Parking Integration:** Provides real-time parking availability and booking through integration with parking authorities, enhancing convenience.

EXECUTION DIFFICULITES:

- **Data Privacy:** Ensure secure user data handling with encryption.
- **Adoption Barriers:** Promote app through government partnerships and awareness campaigns.
- **Technical Limitations:** Maintain reliability via testing and updates.
- **Infrastructure Gaps:** Collaborate with authorities for data integration.
- **Funding Challenges:** Monetize through freemium models, partnerships, and grants.

EXISTING APP

VS

OUR APP

- **All-in-One Safety:** Combines accident hotspots, traffic updates, and parking for Coimbatore, unlike Google Maps which only offers navigation.
- **AI-Powered Alerts:** Predicts accident-prone areas like RS Puram and sends emergency alerts, a feature not available in Uber or OLA.
- **Verified Community Reporting:** Uses AI to verify hazard reports (e.g., potholes on Avinashi Road), ensuring accurate data for road improvements.

Aligning SDG Goals:

- **SDG 3: Good Health and Well-being**
  Monitors driver vitals and detects health risks (e.g., heart rate) to prevent accidents.
- **SDG 9: Industry, Innovation, and Infrastructure**
  Utilizes AI/ML for real-time accident detection and smart navigation, improving transport systems and infrastructure.
- **SDG 11: Sustainable Cities and Communities**
  Provides community hazard reporting and efficient parking solutions, reducing traffic and enhancing urban safety.
- **SDG 12: Responsible Consumption and Production**
  Encourages responsible driving and efficient parking, reducing fuel consumption and emissions.
- **SDG 13: Climate Action**
  Smart navigation and parking recommendations reduce congestion and emissions, supporting climate action.
- **SDG 17: Partnerships for the Goals**
  Promotes collaboration between users, authorities, and communities for safer roads and efficient urban management.

COST STRUCTURE

- **AI Development & Integration:** ₹2-3 lakhs (Accident prediction, traffic insights, emergency response models)
- **App Design & Development:** ₹1.5-2 lakhs (User-friendly mobile app)
- **Cloud Infrastructure:** ₹1-2 lakhs (Real-time data storage & processing)
- **Marketing & Awareness:** ₹50,000-1 lakh (App promotion)
- **Total Estimated Cost:** ₹5-6 lakhs (achievable with open-source tools, phased rollout, and cost-effective marketing).

REVENUE STREAMS

- **Freemium Model:** Free basic features with premium upgrades for advanced services.
- **Partnerships:** Collaboration with insurance companies and parking providers
- **Advertisements:** In-app advertisements from safety-related businesses
- **Government Grants:** Funding for public safety initiatives.