School of Computing

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Embedded Machine Learning for Early Prediction of Heart Attack Symptoms

1. Audience

Who are the users of the product?

- **Primary Audience:**
  - Drivers and passengers, especially those at risk of heart-related conditions.
  - Fleet operators and logistics companies prioritizing driver health and safety.
- **Secondary Audience:**
  - Healthcare professionals seeking real-time, vehicle-integrated health monitoring.
  - Automotive industry stakeholders looking to enhance in-vehicle health monitoring systems.
  - Emergency response teams who require real-time health alerts for immediate action.

2. Needs

What problems does the product solve for the audience?

- **Primary Needs:**
  - A system that continuously monitors driver health and detects early signs of heart-related issues while driving.
  - Real-time alerts to prevent accidents caused by sudden health deterioration.
  - Seamless integration within an EV Cars/Normal Fuel Cars without impacting its performance or efficiency.

- **Secondary Needs:**
    - Connectivity with emergency services for immediate response during critical conditions.
    - Data logging for long-term health tracking and preventive maintenance.
    - Integration with smart vehicle systems for automated safety measures, such as controlled stopping in case of a medical emergency.

3. Products

What is the product, and what does it offer?

- **Core Product:** An **embedded AI-based health monitoring system** integrated into an EV Cars/Normal Fuel Cars , designed to detect early heart attack risks and provide real-time alerts to ensure driver and passenger safety.
- **Additional Features:**
    - Continuous health monitoring while driving.
    - Automatic emergency alert system for immediate assistance.
    - Integration with vehicle control systems to initiate safety measures if needed.
    - Cloud connectivity for remote monitoring and health tracking.

4. Values

What principles guide the product, and what makes it unique?

- **Core Values:**
    - **Safety First:** Enhancing road safety by detecting potential health risks in real time.
    - **Preventive Care:** Proactive monitoring to prevent medical emergencies while driving.
    - **Innovation:** Combining AI, health monitoring, and automotive technology to create a smarter and safer EV Cars/Normal Fuel Cars experience.
- **Differentiators:**
    - Seamless EV Cars/Normal Fuel Cars integration for real-time health tracking without affecting vehicle performance.
    - Automatic emergency response features to mitigate risks on the road.
    - Edge AI processing to ensure real-time, on-device predictions without relying on external connectivity.

5. Vision Statement

To develop an intelligent, real-time, and vehicle-integrated early heart attack prediction system that enhances road safety by continuously monitoring driver health, providing timely alerts, and enabling emergency interventions, ensuring a safer and smarter driving experience in Electric Vehicles.