CA - Prerequisites Document

Name of the Student	Aditya Sampath Kumar
Class and Roll No	D15A / 01
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TITLE :Accident detection system

INTRODUCTION

The Accident Detection System is an AI-powered web application designed to detect vehicular accidents in real-time using deep learning and deliver instant alerts. The frontend, built with **Next.js**, provides a responsive and intuitive interface for users and administrators to monitor incidents. The backend leverages **Flask** to serve a trained **Keras model** that processes video frames or sensor data to classify potential accidents with high accuracy.

SYSTEM REQUIREMENTS

1. Hardware Requirements
● Processor: Intel Core i5 or higher
● RAM: Minimum 8GB (Recommended: 16GB for smooth performance)
● Storage: At least 10GB free disk space
● Operating System: Windows 10/11, macOS, or Linux

2. Software Requirements
● Node.js (v18.16.1 or later) – Required for running the React frontend
● npm (v9.5.1 or later) – For managing frontend dependencies
● Python (3.11.9 or later) – Required for Flask backend
●   VS Code – Recommended IDE for both frontend and backend development
● Postman – For API testing

TECHNOLOGY STACK

1. Frontend
● Next.js (JavaScript library for building UI)
● TypeScript (Strongly typed JavaScript)
● Tailwind CSS (Utility-first CSS framework for styling)

2. Backend

● Flask (Python-based web framework)

● Flask-CORS (To handle cross-origin requests)

SETUP INSTRUCTIONS

1. Install Node.js and NPM

Download and install Node.js from Node.js Official Website.

Verify installation:

node -v

npm -v

2. Install Python and Flask

Download and install Python from the Python Official Website.
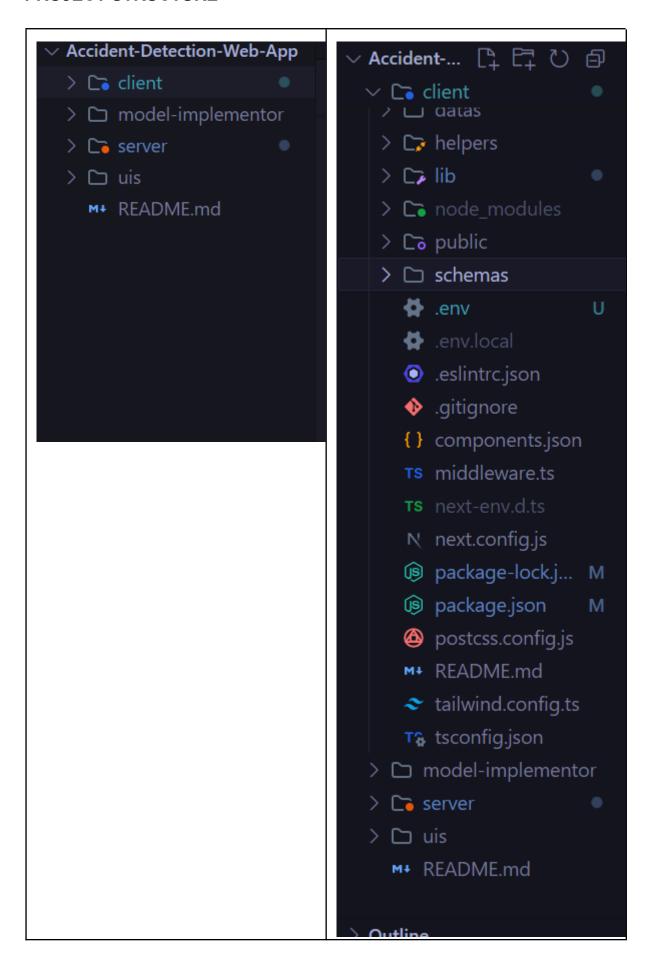
Verify installation:

python --version

pip --version

Install Flask and required dependencies:

pip install flask flask-cors pymongo

PROJECT STRUCTURE

```
∨ Accident-Detection-Web-App
    > 📁● client                    ●
    > 📁 model-implementor
    > 📁● server                    ●
    > 📁 uis
      M↓ README.md
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∨ Accident-...        📄+  📁+  ↻  ⊡
    ∨ 📁● client                   ●
      > 📁 datas
      > 📁 helpers
      > 📁 lib                      ●
      > 📁● node_modules
      > 📁 public
      > 📁 schemas
        ⚙ .env                    U
        ⚙ .env.local
        ◉ .eslintrc.json
        ◆ .gitignore
        { } components.json
        TS middleware.ts
        TS next-env.d.ts
        N next.config.js
        ⬡ package-lock.j...        M
        ⬡ package.json             M
        ⚠ postcss.config.js
        M↓ README.md
        ≈ tailwind.config.ts
        T⚙ tsconfig.json
    > 📁 model-implementor
    > 📁● server                   ●
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> Outline
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CONCLUSION:
This document provides the necessary prerequisites for setting up the Accident detection project, including hardware/software requirements. Ensuring all dependencies and configurations are correctly set up will help in running the project efficiently