WEB X CA

PREREQUISITES – Brain Stoke Prediction

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Title : Brain Stoke Prediction

Introduction:

Brain stroke is a critical medical condition and a leading cause of death and long-term disability globally. It occurs when the blood supply to a part of the brain is interrupted or reduced, which deprives brain tissue of oxygen and nutrients. Timely detection and prevention are essential to reduce the severity of outcomes and improve patient survival rates.

This project, **Brain Stroke Prediction**, is a machine learning-based web application that predicts the likelihood of a person experiencing a stroke based on various health-related features. It uses widely recognized datasets containing medical records, including parameters such as age, hypertension, heart disease, average glucose level, body mass index (BMI), and smoking status. A trained machine learning model is employed to analyze these inputs and provide accurate, real-time stroke risk assessments.

The system is developed using **Flask** as the backend framework and includes a user-friendly frontend built with **HTML**, **CSS**, and optionally **JavaScript**. Users can input relevant health data through the web interface, and the application will instantly display whether the individual is at risk of having a stroke, based on predictive analytics.

This project demonstrates the practical application of machine learning in the healthcare domain and serves as a tool to support early diagnosis and preventive action, potentially saving lives through timely intervention.

System Requirements

1. Hardware Requirements:

- **Processor:** Intel Core i5 / AMD Ryzen 5 or higher (dual-core, 2.0 GHz or faster)
- **RAM:** Minimum 8GB (16GB recommended)
- **Storage:** At least 1GB free space (256GB SSD recommended)
- **Network:** Stable internet connection (especially for MongoDB Atlas users)

2. Software Requirements:

- **Operating System:** Windows 10/11, macOS 10.15+, or Ubuntu 20.04+
- **Code Editor:** Visual Studio Code or compatible IDE
- **Version Control:** Git 2.25+
- Python: Version 3.8 or higher

Technology Stack

Layer	**Technology**
Frontend	HTML/CSS/Typescript(or Streamlit/Flask Templates)
Backend	Flask (Python 3.8+)
ML Model	Scikit-learn
Styling	CSS
APIs	RESTful Flask APIs

Setup Instructions :

Backend Steup:

First Navigate to backend folder:

- Cd project

  Python & Flask:

1. Install Python 3.8+ from https://www.python.org/downloads/. Ensure 'Add to PATH' is checked during installation.

2. Create Virtual Environment:
   python -m venv venv venv\Scripts\activate

For Windows source venv/bin/activate

For macOS/Linux

3. Install Dependencies:

   pip install -r requirements.txt

4. Run Flask App: python app.py

   The app will run at: http://localhost:5000

Frontend Setup

1. Navigate to frontend folder:

   cd project

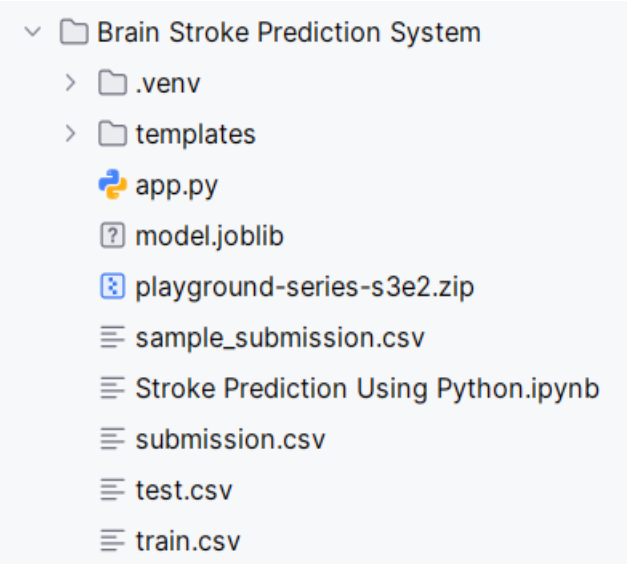
2. Install dependencies:

   npm install

3. npm run dev

Frontend will run at: http://localhost:8081

Project Structure




```
1  Flask==2.3.3
2  pandas==2.2.2
3  numpy==1.26.4
4  scikit-learn==1.4.1.post1
5  joblib==1.4.2
```

Features Overview

- Input Form: Questions on living, marital status, hypertension and any heart disease
- Prediction: Model predicts brain stoke risk (e.g., Likely or not Likely)
- Responsive UI: Clean and user-friendly interface
- Model Integration: Seamless ML model usage with Flask

Conclusion:

By completing the above installations and setup steps, your system will be fully ready to run the Brain Stoke Prediction application. Accurate installation of Python, Flask, and the ML dependencies ensures a smooth development and testing experience.