GeneSentry: AI-Powered Mobile App for Predicting Hereditary Diseases

Project Overview:

This app will use AI/ML to analyse a patient's own health data and family medical history to predict genetically-transmitted diseases and related risk factors. A person's family history is known to be a major predictor of many diseases (since genetics, environment and lifestyle often overlap). By integrating parental medical records, current vital signs (e.g. blood pressure, blood sugar) and medication/allergy history, the app aims to identify patterns that indicate high risk for inherited conditions. Early detection through such predictive models can greatly improve preventive care – machine learning in healthcare is widely noted for its ability to enhance early diagnosis and personalized treatment planning.

For example, ML algorithms applied to EHR data have significantly improved accuracy in predicting conditions and guiding interventions. This system will thus help users (and their doctors) forecast potential genetic disease risks and recommend lifestyle or medication adjustments ahead of time.

Technology Stack:

The backend will be built in Python using the Django web framework. For machine learning, we'll use Python libraries (logistic regression, SVM, random forest, etc.). The mobile app will be built using React Native or Flutter. The system will use PostgreSQL or SQLite via Django ORM.

Key Functionality (Modules):

• User Authentication & Profile
• Data Input & Storage
• Medical History Module
• Machine Learning Prediction Engine
• Recommendation Module
• Data Sharing / Interoperability
• User Interface
• Admin/Analytics

Machine Learning Models:

- Logistic Regression
- Support Vector Machine (SVM)
- Random Forest (RF)

Summary:

GeneSentry combines a mobile interface, Django backend, and ML models to deliver personalized hereditary disease risk predictions and advice. The system follows best practices for security, consent, and data privacy.

Modules & Method Overview:

- Data Collection Module
- Database Module
- ML Module
- Recommendation Module
- API/Integration Module
- Mobile UI Module