Project Title: Predictive Health Analytics: Risk Assessment and Disease Outbreak Forecasting”

Project Description/Abstract: The "Parameter-Based Health Risk Assessment and Disease Outbreak Forecasting" project is a comprehensive data analytics and machine learning initiative aimed at leveraging advanced algorithms and artificial intelligence techniques to assess individual health risks based on various parameters and forecast potential disease outbreaks. By integrating diverse data sources, the project aims to provide personalized health risk assessments for individuals and contribute to early detection and prediction of disease outbreaks on a larger scale.

System Requirements

Hardware Requirements:

- Processor: Intel i5 or higher
- RAM: 8GB minimum
- Storage: 250GB SSD or more
- Internet Connectivity: Stable broadband connection

Software Requirements:

- Operating System: Windows
- Pycharm , python
- Required AI Libraries

Problems in the Existing System

1. **Delayed Disease Detection** – Lack of early warning mechanisms.
2. **Generalized Health Assessments** – One-size-fits-all approaches fail to address individual risks.
3. **Inefficient Data Utilization** – Health data remains underutilized for prediction.
4. **Lack of Real-Time Insights** – Absence of predictive analytics in healthcare decision-making.
5. **Limited Integration of Diverse Data Sources** – Incomplete risk assessment due to isolated data.

Purpose of the Project

- To provide **personalized health risk assessments** based on multiple parameters.
- To develop a **predictive model** for forecasting disease outbreaks.
- To enhance **preventive healthcare** by enabling early intervention.
- To integrate **real-time health monitoring data** for risk evaluation.
- To assist **healthcare professionals and authorities** with data-driven insights.

Functional Requirements

1. **Data Collection & Preprocessing** – Gathers health records, demographic, and environmental data.
2. **Health Risk Assessment Module** – Analyzes individual risk factors.
3. **Disease Outbreak Prediction Model** – Uses AI/ML algorithms for forecasting.
4. **Real-time Monitoring & Alerts** – Notifies users and health officials of potential risks.
5. **Interactive Dashboard & Reports** – Visualizes trends and health insights.
6. **Integration with Wearable Devices** – Collects real-time health data from smart devices.

System Modules

1. **User Data Management Module** – Stores and processes user health data securely.
2. **Machine Learning & AI Module** – Implements risk assessment and prediction algorithms.
3. **Disease Prediction & Forecasting Module** – Analyzes historical data to identify trends.
4. **Visualization & Reporting Module** – Provides graphical reports and risk assessments.
5. **Notification & Alert System** – Sends early warning alerts to users and authorities.
6. **API Integration Module** – Connects with medical databases, government portals, and wearable devices.

Front End and Back End of System

- Front End (Client-Side): StreamLit
- Back End (Server-Side): Python , Machine Learning Models , AI models