

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

PROJECT REPORT

Title: An AI tool for personalized medicine to recommend treatment plans based on genetic profiles.

Team No:

Section: 2B

Problem Statement:

Nowadays, patients are frequently provided with the same treatment regardless of their similar symptoms or diagnoses. However, this approach ignores the genetic differences between individuals, which can greatly affect how they react to medications and treatments. As a result, some treatments might be less effective or even harmful for certain patients, leading to less satisfactory health outcomes.

Aim:

Our aim is to create a personalized medicine tool that can recommend treatment plans to each, and every patient individually based on their genetic profile. The tool would need to quickly examine large amounts of genetic data, find important biomarkers, and match these with known treatment results. The goal is to enhance patient results by offering treatment recommendations that are more precise, effective, and tailored to everyone. These conditions: **Diabetes, Hypertension (High Blood Pressure), Hypercholesterolemia (High Cholesterol), Asthma, and Obesity** will be diagnosed and treated with appropriate medication and care.

Algorithms Used:

- **Decision Trees:** Making treatment recommendations based on specific genetic profiles.
- **Linear Regression:** Predicting continuous outcomes, such as the required dosage of a medication based on genetic data.

Integration with AI:

- **Data Sources:** Collects genetic data from the results.
- **AI Models:** Uses machine learning algorithms to predict responses to different treatments based on genetic markers.

Datasets:

- **Diabetes:** <https://www.kaggle.com/datasets/mathchi/diabetes-data-set>
- **Hypertension (High Blood Pressure):**
<https://www.kaggle.com/datasets/ahmedwadood/blood-pressure-dataset>
- **Hypercholesterolemia (High Cholesterol):**
<https://www.kaggle.com/datasets/mathurinache/cholesterol>
- **Asthma:** <https://www.kaggle.com/datasets/larasusan/asthma-dataset>
- **Obesity:** <https://www.kaggle.com/datasets/lesumitkumarroy/obesity-data-set>

K Aditri Shreeya - 2320040015

K Anvitha Reddy - 2320040120

M Himateja - 2320040036