Stroke Prediction

- ## Introduction

Stroke is a leading cause of death and disability worldwide. It occurs when the blood supply to part of the brain is interrupted, leading to brain damage. Early prediction and prevention of strokes can save lives and reduce the long-term impact on patients. In recent years, machine learning has emerged as a powerful tool for predictive healthcare. By analyzing large datasets of patient information, machine learning algorithms can identify patterns that predict the likelihood of a stroke, enabling healthcare professionals to take preemptive action.

- ## Problem Statement

Stroke prediction is challenging due to the complexity of factors involved, such as patient demographics, medical history, lifestyle choices, and genetic predispositions. Existing healthcare systems may not always identify high-risk individuals in time for intervention. The goal of this project is to develop a machine learning model that can accurately predict the likelihood of stroke in individuals based on their health data. This will help medical professionals make more informed decisions and provide timely interventions.

- ## Goals

To collect and preprocess relevant medical data, including patient age, gender, hypertension, heart disease, glucose levels, body mass index (BMI), and lifestyle habits (e.g., smoking status).

To build and evaluate multiple machine learning models for predicting stroke, including logistic regression, random forest.

Comparing model performance using metrics such as accuracy, precision, recall, and AUC-ROC scores.

To identify the most important risk factors contributing to stroke prediction and providing interpretable results for medical practitioners.

- ## Related Work

https://ieeexplore.ieee.org/document/8079581

https://pmc.ncbi.nlm.nih.gov/articles/PMC9268898/

https://www.sciencedirect.com/science/article/pii/S2772442522000090