Project Proposal

Name : Prateek Naharia | nahariap@bu.edu
Course : BA878 E1 Machine Learning and Data Infrastructure in Health Care (Fall 2023)
Instructor : Ned James McCague | ned.mccague@gmail.com

Title : Enhancing Critical Care through Predictive Analytics: Leveraging the MIMIC-III Database

Overview:
The objective of this project is to utilize the rich data available in the MIMIC-III database to develop predictive analytics tools that can assist in early detection of potential health complications, optimize resource allocation in ICUs, and facilitate informed clinical decision-making, thus significantly improving patient care and outcomes.

Business Case:
With the increasing adoption of digital health record systems, a wealth of data is available in the healthcare sector. However, the integration and effective utilization of this data remain a significant challenge. Furthermore, the healthcare community is under scrutiny for the lack of reproducibility of studies. There is a pressing need for tools that can analyze this data effectively to provide actionable insights, facilitating enhanced patient care and optimized resource allocation in critical care settings.

Data Source
Overview:
The primary data source for this project is the MIMIC-III Clinical Database, a freely available database containing de-identified health-related data of over forty thousand patients who were in critical care units at the Beth Israel Deaconess Medical Center between 2001 and 2012.

Linked to GCP (BigQuery) as physionet-data.

Data Description:
The MIMIC-III database encompasses a highly granular data set, inclusive of vital signs, laboratory results, medications, caregiver notes, and more. It is organized as a relational database with 26 tables, linking various events, measurements, and descriptive data through unique identifiers (e.g., SUBJECT_ID, HADM_ID, and ICUSTAY_ID).