**Title:** AI-Delirium Guard: An AI Predictive Model for Anesthesia Postoperative Delirium in Older Adults

**Objective:** Develop an AI-based predictive model to identify the risk of postoperative delirium in individuals aged 65 years and older who undergo anesthesia for surgical procedures.

**Project Workflow:**

* **Data Collection**
  + Gather a comprehensive dataset from electronic health records and anesthesia databases, focusing on older adults (aged 65 years and above) who underwent surgery with anesthesia. (20,000?)
  + Include data on patient demographics like age, sex etc., diabetes, hypertension, cardiovascular diseases, preexisting dementia, psychiatric diseases, preoperative delirium, type of surgery, duration of surgery, pain medications, anesthesia agents used, anesthesia duration, doses of anesthesia, all the medications used, preoperative health status and postoperative delirium occurrence.
* **Exploring data**
  + explore the data and gain more information about collected data.
* **Cleansing and Preprocessing**
  + Handle missing values, outliers, and standardize data to ensure consistency and quality.
* **Feature Selection**
  + Define postoperative delirium based on standardized diagnostic criteria, such as the Confusion Assessment Method (CAM) or the Diagnostic and Statistical Manual of Mental Disorders (DSM-5) criteria.
  + Identify relevant features and risk factors associated with postoperative delirium, such as age, preoperative cognitive function, comorbidities, type of surgery, and anesthesia medications used.
* **Build a Model**
  + Utilize machine learning algorithms to build the predictive model.
* **Model Training and Validation** 
  + Divide the dataset into training and validation sets and use cross-validation techniques to evaluate the model performance and optimize hyperparameters.
* **Model Testing**
  + Test the model with new data samples that model didn't see before to measure performance on new data and test generalizability.
* **Model Deployment**
  + Deploy a model and create api and user interface to put the model into production.