| Project Title | Predicting Hospital Readmissions |
|---|---|
| Skills take away From This Project | Model building, Visualization |
| Domain | Healthcare |

**Problem Statement:**

- The primary goal of this project is to build a predictive model that can identify patients who are at high risk of hospital readmission within 30 days after their initial discharge.

**Business Use Cases:**

**Healthcare management:** Identify who are the high-risk patients which need special care.

**Approach:**

1.	Data Preprocessing: This task involves cleaning and preparing the healthcare data. You'll need to handle missing values, perform data normalization or scaling, and deal with categorical variables.

2.	Feature Engineering: Create relevant features that can be used for predictive modeling. This may involve extracting patient demographics, medical history, previous hospitalizations, and other relevant information.

3.	Model Building: Develop a machine learning or statistical model that can predict the likelihood of hospital readmission within 30 days. Common approaches include logistic regression, decision trees, random forests, or more advanced models like gradient boosting or neural networks.

4.	Model Evaluation: Assess the performance of the predictive model using appropriate evaluation metrics such as accuracy, precision, recall, F1-score, ROC curve, and AUC (Area Under the Curve).

**Results:**

- Interpretation of model predictions involves understanding which features contribute to the likelihood of hospital readmission. You can use techniques like feature importance analysis to identify key factors.

- Actionable recommendations can be made based on the insights gained from the model, such as targeted interventions for high-risk patients or improvements in care protocols.

**Project Evaluation metrics:**

Success Criteria
Accuracy, Precision, Recall, F1 Score, ROC-AUC
All should be in high range.

**Technical Tags:**

*Machine Learning*
*Data Preprocessing*
*Feature Engineering*
*Model Training*
*Model Evaluation*
*Hyperparameter Tuning*

**Data Set:**

Dataset is available in CSV format.

Dataset:

https://drive.google.com/file/d/14Lh12M6411fnvFJQYdFCATdQ8_-66UhJ/view?usp=sharing

**Data Set Explanation:**

Content and Context
- The data for this project will include healthcare records for patients, which contain information about their medical history, demographics, previous hospitalizations, diagnoses, medications, and other relevant factors.

- Additionally, the data include an indicator or label that specifies whether a patient was readmitted within 30 days (binary outcome).

**Project Deliverables:**

Submission Requirements

Source Code: The complete code used for data preprocessing, model training, and evaluation.

Documentation: A report detailing the methodology, analysis, results, and insights.

Presentation: A slide deck summarizing the project and key findings.

Model File: The trained model ready for deployment.

README: Instructions on how to run the code and reproduce the results.

## Project Guidelines:

Best Practices

Coding Standards: Standard code standard for Python code.

Version Control: Use Git for version control and regularly commit changes.

Documentation: Comment your code and provide clear explanations for your logic.

Collaboration: Use collaborative tools like GitHub or GitLab for team projects.

## Timeline:

| | |
|---|---|
| Analyse data<br>EDA<br>Ploting<br>ML Model Selection | 2 weeks |
| Building Model | 2 Days |
| Total | 2 weeks 2 Days |

**About Session:** The Project Doubt Clarification Session is a helpful resource for resolving questions and concerns about projects and class topics. It provides support in understanding project requirements, addressing code issues, and clarifying class concepts. The session aims to enhance comprehension and provide guidance to overcome challenges effectively.
**Note: Book the slot at least before 12:00 Pm on the same day**

**Timing: Tuesday, Thursday, Saturday (5:00PM to 7:00PM)**

**Booking link :https://forms.gle/XC553oSbMJ2Gcfug9**

**LIVE EVALUATION SESSION (CAPSTONE AND FINAL PROJECT)**

**About Session:** The Live Evaluation Session for Capstone and Final Projects allows participants to showcase their projects and receive real-time feedback for improvement. It assesses project quality and provides an opportunity for discussion and evaluation.
**Note: This form will Open on Saturday and Sunday Only on Every Week**

**Timing: Monday-Saturday (11:30PM to 12:30PM)**

**Booking link : https://forms.gle/1m2Gsro41fLtZurRA**