DEPARTMENT OF APEX INSTITUTE OF TECHNOLOGY

# PROJECT PROPOSAL

## Project Title: -

Hospital Readmission Prediction using Multiple Regression Analysis

## 2. Project Scope: - (Max 500 words)

## The goal of the project is to create a multiple regression analysis-based hospital readmission prediction model. With the help of this predictive model, healthcare providers will be able to intervene and drastically lower readmission rates by pinpointing variables that have a large impact on the chance of hospital readmission. The following primary goals are included in the project:

**I . Data Collection and Pre-processing:**

Assemble thorough patient data that includes medical background, demographics, and previous hospitalization information. The analysis and prediction procedure is built on the data provided. To get accurate, full, and consistent outcomes, data assurance is crucial.

**II. Feature Engineering and Selection:**

Enhance the dataset's prediction ability using feature engineering. To better capture relationships, this can entail developing new variables or altering existing ones. Utilize feature selection approaches to determine the variables that are most important in predicting readmission. This process reduces noise and concentrates the model's attention on key variables.

**III. Multiple Regression Modeling:**

Create a multiple regression model with the features you've chosen to forecast the likelihood of a hospital readmission. Multiple independent variables' effects on a dependent variable are taken into account in multiple regression. The likelihood of readmission in this instance serves as the dependent variable, and the relevant elements obtained through the feature selection procedure serve as the independent variables.

**IV. Model Evaluation:**

Assess the predictive model's performance using appropriate evaluation metrics. Common metrics include Mean Squared Error (MSE), Root Mean Squared Error (RMSE), and R-squared. These metrics gauge the model's accuracy and its ability to explain the variance in the dependent variable. A robust evaluation process ensures that the model's predictions align with observed outcomes.

**V. Strategies for Readmission Rate Reduction:**

Examine the regression model's findings to pinpoint the major variables affecting hospital readmission. Give details about the connection between important factors and the likelihood of readmission. Develop practical measures to reduce readmission rates based on these observations. These tactics can include greater patient education, targeted interventions, or improved discharge planning.

It is essential to uphold a planned and systematic approach throughout the project, following to best practices in data science and statistical analysis. Additionally, to protect patient confidentiality and data security, make sure that sensitive patient data is handled properly in accordance with privacy laws like HIPAA.If this initiative is a success, it could offer healthcare organizations important knowledge on the variables influencing readmission. The application of personalized interventions and techniques to lower readmission rates can be made possible by these insights, which will eventually improve patient outcomes and resource use.

## 3. Requirements: -

* Hardware Requirements

1. Processor (Intel Core i7 or i9 Series)
2. Ram (8 GB)
3. SSD (256 GB) or HDD ( 1TB)

* Software Requirements

1. Operating System (Windows 10 or above or LINUX)
2. Jupyter Notebook or Google Collaboratory
3. Tableaue or Power BI and MS Excel
4. LaTex and Turnitin

**STUDENTS DETAILS**

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| **Name** | **UID** | **Signature** |
| HARSH ANURAG | 20CBS1010 | S1 |
| LOVISH THAKRAL | 20CBS1021 | s2 |

**APPROVAL AND AUTHORITY TO PROCEED**

We approve the project as described above, and authorize the team to proceed.

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| --- | --- | --- |
| **Name** | **Title** | **Signature**  **(With Date)** |
| DR GURWINDER SINGH | PROFESSOR |  |