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| **Project Title** | MedCare AI |
| **Technologies** | Machine Learning Technology |
| **Domain** | HealthCare |

# Problem Statement:

For healthcare companies like Apollo Hospitals Enterprise Limited to plan effectively and operate efficiently, they must understand their patients' disease conditions and see how those conditions progress over time. To segment patients by their disease conditions and severity of illnesses, the healthcare company's management team approached their AI team for machine learning applications (MLOps)

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**Approach:**

Deepsphere.AI

* **Define Objectives:**Clearly define the goals and objectives of the project. Determine what you want to achieve through patient segmentation, such as optimizing treatments, resource allocation, or personalized care plans.
* **Data Collection:**Gather relevant patient data, including medical history, diagnostic tests, treatment plans, and outcomes. Ensure data quality, completeness, and security.
* **Data Preprocessing:**Clean and preprocess the data to handle missing values, outliers, and feature engineering. Normalize or standardize data as needed.
* **Labeling:**Collaborate with healthcare professionals to label the data with disease condition and severity categories. This labeled dataset serves as the basis for supervised machine learning.
* **Feature Selection:**Identify and select features that are informative for patient segmentation. These features can include demographics, lab results, vital signs, and more.
* **Model Selection:**Choose appropriate machine learning models based on the project's complexity. Options include logistic regression, decision trees, random forests, support vector machines, or deep learning models, depending on the problem.
* **Training and Evaluation:**Train the selected models using the labeled data and evaluate their performance using relevant metrics, such as accuracy, precision, recall, F1-score, and ROC-AUC.
* **Deployment with Streamlit:**Create a Streamlit application to deploy the machine learning model. Streamlit's interactive widgets allow users to explore the results and insights.
* **K-Means Clustering:**Apply K-Means clustering to segment patients based on disease severity and related features. The number of clusters should be determined based on data and project objectives.
* **Data Visualizations:**Generate data visualizations to present key findings, such as histograms, density plots, scatter plots, and pair plots, enhancing the interpretability of results.  
  Interpretation and Communication:

# Dataset:

Dataset Link: <https://www.kaggle.com/datasets/asjad99/mimiciii>

# Project Evaluation metrics:

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| **Sn.No** | **Develiable** | **Format** |
| 1 | Document | Link: https://github.com/Nithya9404/RIT\_HACKATHON/blob/main/Hackathon\_Document%20(1).pdf |
| 2 | Code | <https://github.com/Nithya9404/RIT_HACKATHON/blob/main/README.md>  <https://github.com/Nithya9404/RIT_HACKATHON/blob/main/medcare_ai.py>  <https://github.com/Nithya9404/RIT_HACKATHON/blob/main/updated_drg.csv> |

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|  |  | <https://github.com/Nithya9404/RIT_HACKATHON/blob/main/requirements.txt> |
| 3 | User  Interface | Streamlit |
| 4 | Deployment | The deployment process for code can be done using cloud platform Streamlit |

**Final Deliverables:**

1. GitHub Repository: https://github.com/Nithya9404/RIT\_HACKATHON

Deepsphere.AI

1. App Link: <https://rithackathon-mowqftdqj5gx5ze2qxxc6y.streamlit.app/>
2. Project Document: https://github.com/Nithya9404/RIT\_HACKATHON/blob/main/Hackathon\_Document%20(1).pdf
3. Google Form Submission: Submit the GitHub repository link, app link, and project document link through the provided [Google Form](https://forms.gle/kFxNVwVj1yFGhhZt8).