ESTIMATION & PREDICTION OF HOSPITALIZATION AND MEDICAL CARE COST

Define problem/problem understanding:

In modern times ,healthcare is a vital sector of any economy, as it aims to provide quality service for the prevention, diagnosis, treatment, and management of illness or injuries. Hospitalization and medical care are essential services in healthcare that require cost estimation and prediction for planning, management ,and resource allocation.

This report will highlight the importance of cost estimation and medical care the factors that affect these Medical costs are one of the most common recurring expenses in a person's life. Based on different research studies, BMI, ageing, smoking, and other factors are all related to greater personal medical care costs.

estimates of the expenditures of health care related to obesity are needed to help create cost-effective obesity prevention strategies. Obesity prevention at a young age is a top concern in global health, clinical practice, and public health. To avoid these restrictions, genetic variants are employed as instrumental variables in this research.

SPECIFY THE BUSINESS PROBLEM:

Artificial intelligence (AI) is driving massive improvement and innovation in the healthcare business. AI in healthcare can be extremely beneficial to both provides as well as patients when used in the following areas – improving care, disease management, early risk identification and workflow automation and optimization.

Several factors affect hospitalization and medical care cost, including patient characteristics, treatment characteristics, and healthcare system characteristics. several method are used to estimate and prediction hospitalization and medical care cost.

Statical analysis involves the use of statistical techniques to analyze large datasets and predict future hospitalization and medical care cost based on path trends and patterns.

From making an accurate diagnosis to maximizing hospital efficiency. AI has proven to be a boon for the hospitalization & medical care business. Here are a few ways AI is revolutionizing the healthcare business and driving towards digital transformation to better engage with users and generated more revenue.

BUSINESS REQUIREMNET:

Work with healthcare companies on different custom AI and ML based models that help in improving revenue reducing costs and offering enhanced customer experience.
In case you are also looking for AI software development service, get in touch with our experts.

DATA AVALIABILITY:

one of the biggest challenges with AI system is that training them requires huge amounts of data from several source with include electronic health records.

PRIVACY CONCERN:

AI for the hospitalization is the amount of data collected that contains sensitive information requires additional security measures to be implemented.

SOCIAL OR BUSINESS IMPACT:

In hospitalization AI is already changing the patient experience. In social AI will be enable to the next generation of radio tools that are precise and detailed enough to replace the need for tissue sample in some case.

DATA COLLECTION & EXTRACTION FROM DATABASE:

In order to effectively train artificial intelligence massive amount of data must be gathered. Acquiring this data however comes at the cost of patient privacy in most cases and is not well received publicly For example, a survey conducted in the UK estimation that 63% of the population is uncomfortable with sharing their personal data in order to improve artificial intelligence technology.

The scarcity of real accessible patient data is a hindrance that deters the progress of developing and deploying more artificial intelligence in healthcare

Collect the dataset:

AI system can be deployed in hospitalization & medical care application they need to be trained through data that are generated from clinical activities, such as screening diagnosis treatment assignment and so on .

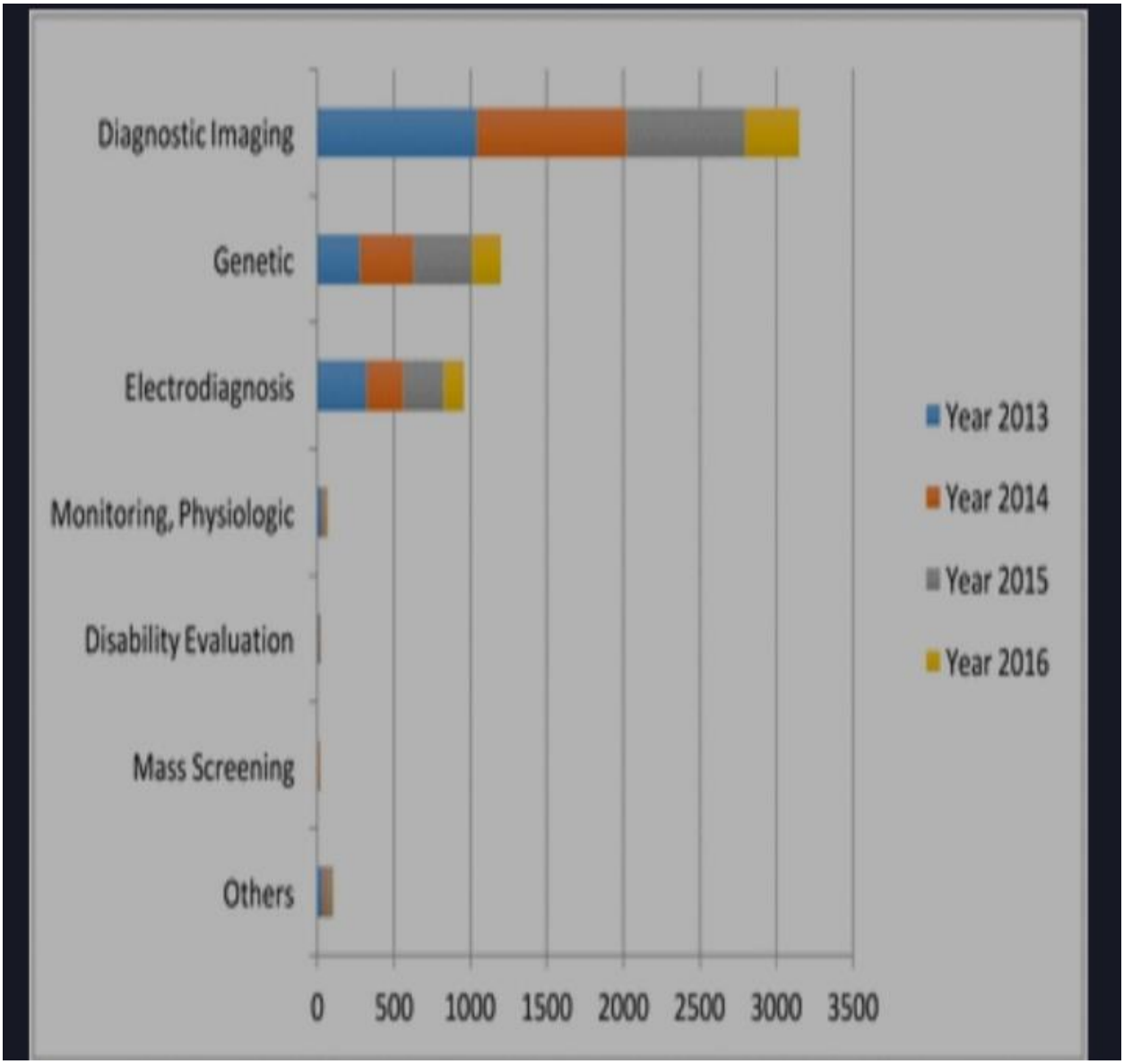
These clinical data often exist in but not limited to the form of demographics, medical notes, electronics recording from medical devices, physical examination

And clinical laboratory and image.

```
#import necessary libraries
Import pandas as pd
From sklearn.linear_model import
LinearRegression
From sklearn.model_selection import
train_test_split
from sklearn.metrics import
mean_squared_error


#Load dataset
Dataset=pd.read_csv(“hospitalization_costs.csv”)


#Separate features(X)and target variable(Y)
X=dataset.iloc[;,;-1],values
Y=dataset.iloc[;,;-1],values

#Split the dataset into training and testing sets
X_train,X_test,Y_train,Y_test=
Train_test_split(X,y,test_size=0.2,random_state=0)

#Train the linear regression model on the training set
Regressor=LinearRegression()
```

Regressor.fit(X_train,Y_train)

#predict the hospitalization medical acre cost on the testing set
Y_pred=regressor.predict(X-test)
#Evaluate the model using mean squard error
Mse=mean_squared_error(y_test,y_pred)
Print("Mean squared error;".mse)



The data types considered in the artificial intelligence artificial(AI) literature. The comparison is obtained through searching the diagnosis techniques in the AI literature on the PubMed database.

DATA PREPARATION:

In the diagnosis stage a substantial proportion of the AI literature analysis data from diagnosis imaging, genetic testing and electrodiagnosis. In addition physical examination notes and clinical laboratory results are the other two major data source.

We distinguish them with image, genetic and electrophysiological(EP) data because they contain large portion of unstructured narrative texts, such as a clinical notes, that are not directly analysable.

AS a consequence the corresponding AI application focus on first converting the unstructured text to machine record .

DATA VISUALIZATION:

Data visualization in the hospitalization & medical industry is no longer an option-it's a must have for modern medical organization. These global market of healthcare data analysis is estimated to grow 3.5 times in just six year.

While many factors influence the boom in data analystic and visualization tools the most recent and obvious one is the pandemic. To bring relevant information into focus healthcare organization implemented tools for data integration and visualization.

Modern data visualization tools in healthcare convert complex data into user friendly visuals that are easy to understand for its stakeholders.

DASH BOARD :

Dash board combine several interactive reports and are the most common visualization tool used by hospitalization medical care organization.

They can be built into existing software together with data analysis functionality or be a part of reporting software tailored to the organization specific need

There are tree main type of dashboard:

- Operational for displaying real time data
- Strategic for showing patterns and trends over time
- Analytical for more advanced analytics .

STORY :

Medical and technological advancement occurring over this half century period that have enabled the growth of medical care cost .AI algorithm can also be used to analyze large amounts of data through hospitalization & medical care cost records.

Automation can provide benefits alongside doctors as well . it is expected that doctor who take advantage of AI healthcare will provide greater quality healthcare that doctors and medical establishment who do not.AI can definitely assist physicians to make better clinical decision or even replace human judgement in certain functional areas or healthcare .

The increase availability of healthcare data and rapid development of bigdata analytic methods has made possible the recent successful application of AI in healthcare.

Guided by relevant hospitalization questions powerful AL techniques can unlock hospitality relevant information hidden in the massive amount of data which in turn can assist hospitality making

NUMBER OF SCENES OF STORY:

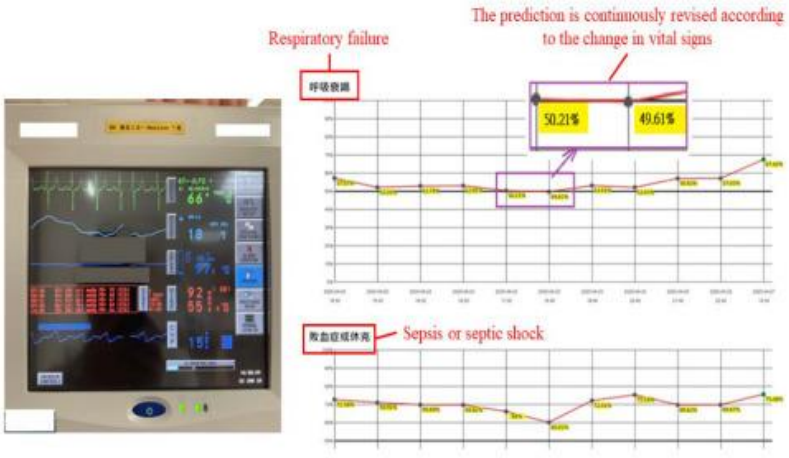
- Motivation of applying AI in healthcare.
- Data types that have be analysed by AI systems.
- Mechanisms that enable AI system to generate medical care cost meaning ful results
- Hospitalization and medical care cost that the AI communities are currently tacking.

CREATING A REPORT:

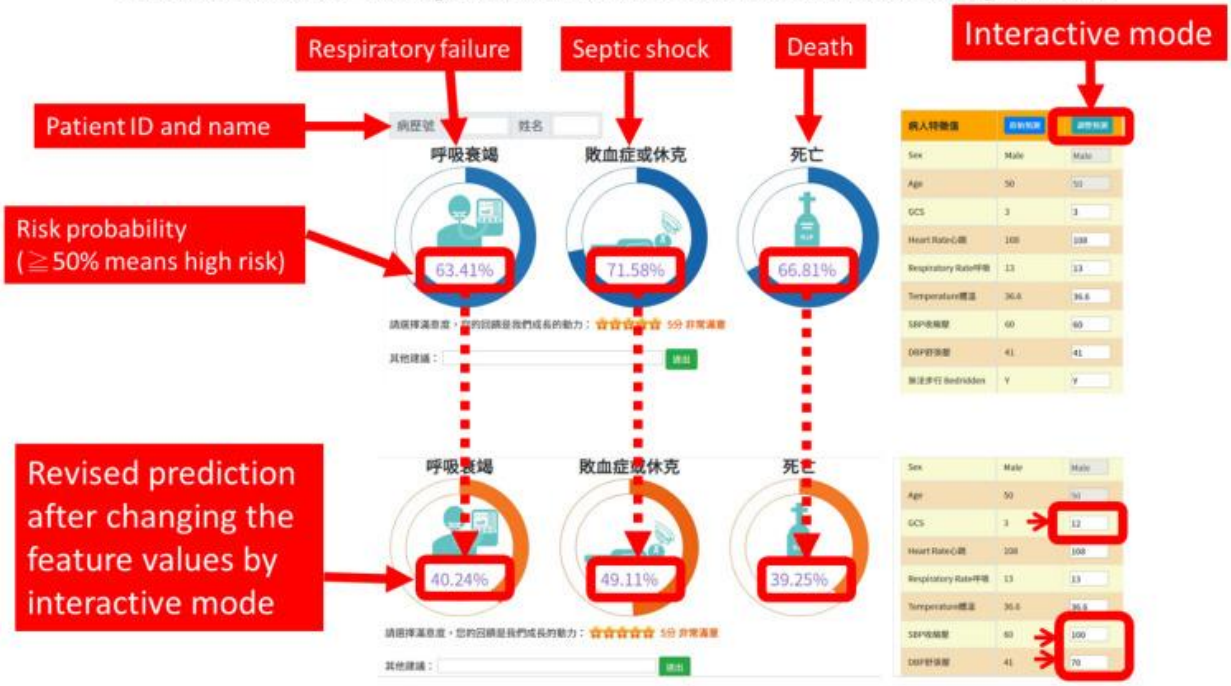
AI dashboard currently being implemented in the ED. User can click the bed to browser through the detailed results. High risk in red means that at least one of the outcome risk probability is equal to or above 50%.

The below figure features of IoT -enabled and interactive function (pneumonia patient).

Note: IoT Internet of things.



Real-time retrieval of vital signs from IoT-enabled instruments for continuous predictions.



Feature values can be adjusted to interactively simulate the prediction of changes in the possible prognosis.

PERFORMANCE TESTING:

AI is a field of computer science which makes a computer system that can mimic human intelligence. It is comprised of two words “Artificial ” and “intelligence” which means a human made thinking power.

This is an insight into how data produced by performance tests and analysed by artificial intelligence can be used to be define future tests and load profiles.

UTILIZATION OF DATA FILTER:

Data mining in healthcare. Application of AI techniques in hospitalization & medical care cost and wellbeing system. visualization and interactive interface related to medical care cost. Emerging technologies for human life data and database, big data and data timing AI model. Querying and filtering on heterogeneous, multi source streaming hospitalization & medical care cost.

Number of calculation fields -2

Number of visualization /graphs-2