National University of Computer and Emerging Sciences

Artificial Intelligence Project Proposal

Electronic Health Record Analysis (EHR):

Group Members:

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Introduction

Electronic Health Records (EHRs) contain a vast amount of data that can provide valuable insights into patient health, treatment outcomes, and clinical operations. However, the sheer volume of data makes it challenging for healthcare professionals to analyze and extract useful information. Therefore, we propose to develop an AI system that can analyze EHRs to identify patterns and trends in patient data. This project aims to enhance patient outcomes, lower healthcare expenses, and streamline clinical operations.

Project Objectives

The main objectives of this project are as follows:
1. To develop an AI system that can accurately analyze electronic health records and identify patterns and trends in patient data.
2. To provide healthcare professionals with valuable insights into patient health, treatment outcomes, and clinical operations.
3. To help healthcare professionals make more educated decisions on patient treatment by identifying patients who are highly susceptible to developing a specific ailment and suggesting preventative measures.

How we will use it

For instance, depending on a patient's medical history, lifestyle choices, and other risk factors, an AI system may examine EHRs to identify patients who are highly susceptible to developing a specific ailment. Healthcare professionals could utilize this knowledge to put preventative measures in place, such as lifestyle changes.

Techniques We Will Use:

To achieve the project objectives, we will use a combination of techniques from the field of machine learning. Specifically, we will use supervised learning techniques such as decision trees, random forests, and neural networks to develop models that can accurately classify patients based on their medical history, diagnoses, and other factors.

The reason we will choose supervised learning techniques is that they have been shown to be effective in a wide range of healthcare applications, from diagnosing diseases to predicting patient outcomes. By providing an AI system with labeled data, we can train the system to recognize patterns in the data and make accurate predictions on new, unseen data.

We will also use unsupervised learning techniques such as clustering to identify groups of patients with similar characteristics. By clustering patients based on their medical history, diagnoses, and other factors, we can gain insights into patient populations and identify areas for improvement in healthcare delivery.

Expected Timeline Of Project:

As we already have some publicly available datasets such as the Medicare Provider Utilization and Payment Data: Physician and Other Supplier dataset or the Hospital Compare dataset, we will apply preprocessing and visualization techniques to analyze the data. We aim to complete this project within this semester.

Conclusion:

Developing an AI system that can analyze EHRs to identify patterns and trends in patient data has the potential to revolutionize healthcare delivery. By providing healthcare professionals with valuable insights into patient health, treatment outcomes, and clinical operations, we can enhance patient outcomes, lower healthcare expenses, and streamline clinical operations. The combination of supervised and unsupervised learning techniques will enable us to develop models that accurately analyze electronic health records and provide valuable insights into patient data.

LINKS FOR AVAILABLE DATASETS FOR OUR PROJECT:

https://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Medicare-Provider-Charge-Data/Physician-and-Other-Supplier.html
https://data.medicare.gov/data/hospital-compare
https://mimic.physionet.org/
https://physionet.org/
https://www.cdc.gov/nchs/nhanes/index.htm