PATIENT CASE SIMILARITY

Batch Number: CAI-G24

Under the Supervision of,

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PRESIDENCY UNIVERSITY
40 YEARS
Private University Estd. in Karnataka State by Act No. 41 of 2013

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Problem Statement Number: PSCS194

Organization: ezDI-Healthcare & Biomedical Devices

Category (Hardware / Software / Both) : Software

Problem Description: We intend to develop a web application for Clinicians and Researchers. There is a central database which contains EHR and on this EHR, we are applying Machine Learning algorithms to train our model. Patients are clustered based on their medical conditions. The accuracy of the similarity scores will be checked using RMSE. We are providing two interfaces i.e., one for Researchers and another for Doctors. A new user needs to register themselves based on their designation and after successful registrations, he/she has to login. Researchers interface will have options like querying the database from which patient similarity score matrix between any two sets of individuals will be generated based on trained model. This can be used for his/her medical research such as patients who have received similar treatments or examine their medical records for exposure and outcomes. Also, he/she can conduct case-control studies which is a retrospective study in which a group of individuals that are disease positive is compared with a group of disease negative individuals. Further the application can assist them in conducting clinical trails. Doctors interface will have functionality to query the database based on new patient's symptoms/parameters, first we will classify to which cluster the new patient belongs to and then give similarity scores with other patients. From this, a doctor can do an observational study based on demographics (age, location, etc.) and history of most similar case patient. This can assist the doctor in diagnosis and recommend treatment to patient.

Difficulty Level: Medium

Github Link

Access all the project files on GitHub:

https://github.com/pranavganesh001/Patient-Case-Similarity

Analysis of Problem Statement

Technology Stack Components:

➢ Python-Machine Learning Algorithms
➢ Html & CSS
➢ Html Frameworks

Analysis of Problem Statement (contd...)

Software and Hardware Requirements:

➢ Laptop (11th Gen Intel(R) Core(TM) i5-11320H @ 3.20GHz   2.50 GHz, 16 GB

  RAM)

➢ Google Colab or Jupyter

➢ Visual Studio or Notepad

Timeline of the Project (Gantt Chart)

Task	Start Date	End Date	Days	Progress	04-09	08-09	12-09	16-09	20-09	24-09	28-09	02-10	06-10	10-10	14-10	18-10	22-10	26-10	30-10	03-11	07-11	11-11	15-11	19-11	23-11	27-11	01-12	05-12	09-12	13-12	17-12
Review 0																												
Title Selection & PPT	04-09-2024	13-09-2024	9	100%																											
GitHub Repository	05-09-2024	13-09-2024	8	100%																											
Finalizing Objectives	08-09-2024	13-09-2024	5	100%																											
Methodology	08-09-2024	13-09-2024	5	100%																											
Review 1																												
Abstract	12-09-2024	24-09-2024	12	10%																											
Software Details	12-09-2024	24-09-2024	12	20%																											
Exploring Research papers	16-09-2024	24-09-2024	8	20%																											
Architecture Diagram	18-09-2024	24-09-2024	6	0%																											
Source Code Details	18-09-2024	24-09-2024	6	50%																											
Review 1 Report	18-09-2024	24-09-2024	6	10%																											
Review 2																												
Algorithm	24-09-2024	15-10-2024	21	0%																											
50% implementation of Code	24-09-2024	15-10-2024	21	0%																											
50% Report Completion	24-09-2024	15-10-2024	21	0%																											
Review 3																												
100% implementation of Code	15-10-2024	19-11-2024	35	0%																											
100% Report Completion	15-10-2024	19-11-2024	35	0%																											
Live Demo	15-10-2024	19-11-2024	35	0%																											
Final Viva																												
Live Demo	19-11-2024	17-12-2024	28	0%																											
Plagiarism Check	19-11-2024	17-12-2024	28	0%																											
Hard Copy Report Submission	19-11-2024	17-12-2024	28	0%																											
Publication of Research Paper	19-11-2024	17-12-2024	28	0%																											

References

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Patient similarity: emerging concepts in systems and precision medicine
S.-A. Brown

R. Miotto, L. Li, B.A. Kidd, J.T. Dudley
Deep patient: an unsupervised representation to predict the future of patients
from the electronic health records
Sci. Rep., 6 (2016)