

CYBERGENAI'26 CONFERENCE PROCEEDINGS

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on

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(CyberGenAI'26)**

IN ASSOCIATION WITH



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&



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A SMART CLINICAL CLUSTERING MODEL FOR DISEASE PROFILING USING ELECTRONIC MEDICAL RECORDS

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ABSTRACT

A computerized system for storing and maintaining patient data developed and renewed by physicians or medical institutions is an Electronic Medical Record (EMR). It typically contains a patient's medical history, diagnoses, prescribed medications, vaccination records, allergies, laboratory results, radiological images, and treatment plans. Objective: Unfortunately, there are a number of impediments to retrieving information from EMRs efficiently. The reasons that cause data fragmentation are that patient data exists over several modules: laboratory reports, radiology, and prescriptions. Also, the unavailability of common data formats across institutions further complicates data merging and retrieval. Methods: In this regard, this research proposed a Smart Clinical Clustering Model for Disease Profiling (SCCMDP) that integrates and combines the DBSCAN, Agglomerative, and K-Means clustering algorithms. The study's vector-borne disease dataset includes 64 symptoms associated with 11 distinct forms of fever. In order to categorize patients with similar disease conditions or symptoms and to help a clinician identify subgroups benefiting from particular effective treatments, the output of an individual clustering algorithm in the IMCA was then assessed on an individual basis. Results: Several metrics are used to assess the performance of the clustering algorithms, including the Silhouette Score, Davies-Bouldin Index (DBI), and Calinski-Harabasz Index (CHI). According to the findings, Kmeans clustering produced more balanced clusters with a better CHI value but marginally less compactness when compared to Agglomerative and DBSCAN approaches

Keyword: Vector borne Disease, K-Means Clustering, Agglomerative Clustering, DBSCAN Clustering.