

A Survey Paper on Medical Billing System Using Machine Learning

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Abstract: *Medical billing systems and medicine prediction by pharmacists are two critical aspects of healthcare management. The medical billing system helps to streamline the billing process, reduce errors, and improve revenue cycle management. On the other hand, medicine prediction by pharmacists is an AI-powered tool that helps pharmacists to predict the probability of a patient developing a disease or experiencing adverse effects from a medication. This tool takes into account a patient's medical history, medication regimen, and genetic information to provide personalized medication recommendations. Together, these two technologies play a vital role in helping to improve the efficiency and effectiveness of healthcare services, ultimately leading to better patient outcomes.*

Keywords: Medical assistance, web services, distributed processing, access control, Hospital, Information System, Integration, Pharmacy

I. INTRODUCTION

Medicine prediction and scientific billing device utility is an critical technological advancement inside the healthcare industry. This software combines predictive analytics with scientific billing to enhance patient effects and streamline the billing system.

The drugs prediction aspect of the application utilizes artificial intelligence and gadget studying algorithms to expect the simplest medicinal drugs for sufferers primarily based on their medical records, signs, and different factors. This allows healthcare experts make extra informed choices about treatment options and improves affected person consequences.

Then again, the medical billing device software simplifies the billing system by way of automating the generation of clinical payments and insurance claims. This reduces the administrative burden on healthcare companies and minimizes billing mistakes, ensuring that patients are as it should be billed for the offerings they acquire.

Together, those two elements of the software provide a complete answer for healthcare companies to enhance patient care and streamline administrative procedures.

II. LITERATURE SURVEY

In the paper [1], Performing a detailed examination of the viability of implementing the hospital-pharmacy management system (HPMS) in the setting of the hospitals in the United Arab Emirates (UAE) is required to complete an intensive feasibility study. The technological, financial, operational, and organisational components of the system may be assessed in order to assess its feasibility and possible advantages Conducting polls of medical professionals, hospital IT directors, and end users: In order to get their ideas, feedback, and perspectives on the proposed HPMS, several stakeholders, including doctors, hospital IT managers, and end users, will be surveyed. This approach aids in gathering feedback and real-world insights from important stakeholders who will be directly impacted by the system. Limited scope: The availability and depth of pertinent literature on a given topic may be a restriction of literature reviews. Finding current and thorough literature on a subject as quickly moving as healthcare and technology may be difficult. Lack of real-world validation: Feasibility studies may be founded on hypotheses and projections and may not accurately reflect the intricacies and nuances of real-world implementation. The results of the feasibility study may not reflect the real results and benefits of the suggested HPMS.

In the paper[2], Qualitative research, more especially descriptive research, is the methodology employed in this paper. The author analyses the state of the Indonesian digital market, highlighting the benefits and drawbacks of technology in

business, and offers a solution to the problems faced in remote communities by creating an e-payment system that makes use of SMS technology, the internet, and social media. Limited coverage: SMS technology has coverage restrictions, even if it can be a solution for places with spotty internet access. SMS might not be a practical solution for all locations because it is not always accessible in Indonesia's remotest districts. The viability of an SMS-based electronic payment system hinges on the accessibility and dependability of mobile network coverage in outlying places. The proposed solution might not perform well in locations with inadequate or nonexistent mobile network coverage.

In the paper [3] The design and implementation of a civil affairs real-time medical aid system is the technique employed in the study to address the issues with the current medical help system. By enabling persons in need to promptly cancel their medical assistance accounts at specific medical facilities without having to pay for the aid component of the medical expenses, the system seeks to increase the effectiveness, transparency, and convenience of medical support. Depending on the situation, the civil affairs department may be able to offer the required advance cash, and each person would only be responsible for covering their own portion of the costs.

In the paper [4] The study discusses the development of web-based medication search and informational systems using data management and processing approaches. It also emphasises the need for smarter conclusions and suggestions, such as taking into account contraindications and addressing concerns with fatigue or knowledge gaps among chemists.

The paper's approach seems to be vague and inadequately defined. The study acknowledges the creation of expert systems for the Kazakhstani pharmaceutical market, but it doesn't go into detail on the process that went into their creation. It is therefore challenging to evaluate the approach's advantages and disadvantages. This methodology has some drawbacks, including a lack of transparency, a lack of rigour, a lack of generalizability, a lack of inventiveness, and a lack of discussion of ethical issues. It focusses more on RAID architecture and have high project requirements.

In the paper [5] Systems for pharmacy administration and medical billing can employ fuzzy logic to make decisions and analyse large amounts of data. Examples include determining possible drug interactions, making a diagnosis of a condition, looking at billing information, and improving inventory management. Understanding the system needs and context is crucial for implementing fuzzy logic, and more investigation and validation may be required. Inventory management: By examining sales information, trends, and seasonality, fuzzy logic can be utilised to optimise inventory management. These inputs can be represented by fuzzy sets, and the system can employ relevance criteria to find the best reorder points, stock levels, and pricing schemes. It's critical to have a thorough understanding of the particular requirements and constraints before implementing fuzzy logic in pharmacy management or medical billing systems.

In the paper [6] A combination of literature review and research methodology is used in the paper's methodology. The writers did a survey of the literature to determine the difficulties and problems with the current pharmacy management system. They looked at pertinent articles on inventory theory, information technology, and pharmaceutical management. Based on this study of the literature, the authors created a research technique that uses observation to ascertain user needs and an entity-relationship diagram (ERD) model to specify the data and relationships in the pharmacy management system. This methodology does have several drawbacks, though, including a dearth of empirical data, a constrained scope, subjectivity, a lack of comparisons, generalizability, and technical viability. It's crucial to review research methodology objectively in order to determine its advantages, disadvantages.

In this paper [7] The methodology used in the paper "Multi Model Implementation on General Medicine Prediction with Quantum Neural Networks" includes data gathering, data pre-processing, model development using a combination of classical machine learning models and quantum neural networks, model evaluation using various performance metrics, and result interpretation. Although the suggested method aims to increase the predictive accuracy of models used in general medicine, its drawbacks—such as the requirement for a sizable dataset and the limitations of current quantum computing hardware—are also explored.

In the paper [8] An automated system to manage medication stocks in hospitals, The methodology used in the paper involves data collection, system design, algorithm development, system implementation, and system evaluation. The authors collected data on medication stocks, usage, and orders from a hospital pharmacy, designed an automated system to manage medication stocks, and developed an algorithm using a combination of economic order quantity (EOQ) and reorder point (ROP) models to optimize inventory management. The system was implemented in the hospital pharmacy, and its performance was evaluated using several metrics. The algorithm used is a modified version of the EOQ and ROP models to optimize medication inventory management.

III. CONCLUSION

All of the studies discussed in this review concentrated on the implementation of different systems to enhance the delivery of healthcare. The majority of these studies used a mixed-methods research design, and each work highlighted the constraints of the systems under study. In multiple articles, the significance of comprehending the precise specifications and context of the system being developed was emphasised, and the shortcomings of each paper's methodology were also discussed. Overall, the papers acknowledge the need for more rigorous and open research in this area while offering insightful information on the difficulties and prospects for advancing healthcare through technology. Each paper's methodology is critiqued for its shortcomings, particularly those related to transparency, empirical data, generalizability, and technical feasibility.

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