

Abstract

Topic: Unveiling the Human Impact: Enhancing Diagnostic Accuracy through Data Mining in Healthcare

Misdiagnosis isn't just a statistic; it's a reality that affects real people every day. Imagine a mother who receives the wrong diagnosis for her child's illness, leading to unnecessary treatments and prolonged suffering. Or a patient who's prescribed medication they don't need, enduring side effects and additional health complications. These scenarios highlight the human toll of misdiagnosis, where lives are disrupted, trust in the medical system is shaken, and precious time and resources are wasted.

Doctors, too, are impacted by misdiagnosis. Each incorrect diagnosis weighs heavily on their conscience, knowing that their decision could have profound consequences for their patients' well-being. It's a burden that affects not only their professional reputation but also their sense of purpose and fulfillment in their chosen career.

In the quest to improve diagnostic accuracy, researchers turn to innovative techniques like data mining. By delving into vast amounts of medical data, they seek patterns and insights that can refine the diagnostic process. This isn't just about numbers and algorithms; it's about harnessing technology to empower healthcare professionals with the tools they need to make more accurate diagnoses and ultimately save lives.

In this paper, we employ data mining techniques to identify insights from a prescription drug dataset that can be leveraged to enhance the diagnostic procedure. In this study, the disease and its category were predicted using four single classification algorithms: random forest, K-nearest neighbours, decision trees, and simple Bayes. Next, we present our suggested model using an Ensemble Learning methodology to enhance the performance of these algorithms. Several tests were conducted in the last step to evaluate the effectiveness of various data mining methods. The study's final model has a kappa score for illness predictions and for disease category predictions, for accuracy to check which has better performance than other studies in this field.

The findings of studies like this offer hope for a future where misdiagnosis is minimized, where patients receive the right treatment at the right time, and where healthcare resources are used efficiently. It's about more than just improving statistics; it's about improving the human experience of healthcare, restoring trust, and ensuring that every individual receives the care they deserve.