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# Predicting non-communicable diseases using machine learning techniques

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If diseases are not treated promptly, they can lead to many health issues and these could be sometimes fatal. These problems are exacerbated by the lack of specialists, doctors, and health facilities in Sri Lanka. Accurate diagnosis of treatment depends on the method used for diagnosis. In general, when one suffers from a particular disease, the person has to see a doctor, which is often a time-consuming and expensive task. Sometimes, patients have limited access to physicians and hospitals, and therefore run the risk of the illness not being identified. This would be relatively overcome, if an automated method can be used, saving both time and money and being efficient and effective for the patient as well as the doctors. This study aims to build a web-based application coupled with a mobile application, which predicts the disease by getting patients' symptoms as inputs. A questionnaire is used to obtain symptoms from the patient. Further, it would be possible for the patient to upload images which may assist the doctor in the diagnosis. For example, if a patient suffers from a skin disease he can upload an image of the diseased skin to the system. The system would also assist the user by suggesting the best physicians for the predicted disease and allow them to make appointments with those doctors and find the nearest hospitals those doctors are available. Moreover, the physicians would have the ability to make their channelling schedules through the system. Therefore, the system would be beneficial for both patients and doctors as it saves time and money. The system would allow saving the medical history of the patients too. A dataset of symptoms was gathered from two sets of patients at the Teaching Hospital, Karapitiya, with each dataset consisting of 300 patients. To classify the diseases, K Nearest Neighbour supervised machine learning algorithm was used. The average accuracy gained was 0.72 for the correct disease prediction. The lack of patients' data records for the data of the symptoms set resulted in the low accuracy of the system. The system intends to use more supervised machine learning algorithms like Naive Bayes and decision tree in further developments, to choose the best algorithm which, gives more accuracy for disease prediction.

**Keywords:** Disease Prediction, Image Processing, KNN Algorithm, Machine Learning, Non-communicable diseases