Universiti Teknologi MARA

Diagnosis and Recommender System for Diabetes Patient using Decision Tree

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Thesis submitted in fulfilment of the requirements for
Bachelor of Computer Science (Hons.)
Faculty of Computer and Mathematical Sciences

January 2024

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah, because of His Almighty and His most blessings, I was able to finish this research within the time duration given. Firstly, I want to express my special thanks to my supervisor, Dr. Normadiah binti Mahiddin, for her guidance, understanding, patience, and most importantly, for providing positive encouragement and a warm spirit to finish this research and project. It has been a great pleasure and honour to have her as my supervisor. Besides, I also want to say thank you to my lecturer for CSP600 and CSP650, Madam. Ummu Fatihah binti Mohd Bahrin, who is essential to finishing the research.

Special appreciation is also directed to my beloved parents and family, who have always been my biggest supporters and have always given me the motivation to finish this study. I greatly appreciate the efforts of those who have always accompanied me throughout the completion of this study.

Last but not least, I would like to offer my special thanks to all my friends, who have helped me finish this proposal every step of the way. This research would not be possible without them.

ABSTRACT

Diabetes mellitus, particularly known as type 2 diabetes, is a significant public health concern in Malaysia. The increasing prevalence of this chronic disease necessitates the development of effective diagnosis and recommender systems to reduce its impact on public healthcare. This project aims to develop a decision-making support model for diabetes diagnosis and treatment recommendation using the decision tree algorithm. The objectives include studying the requirements of the decision tree in the diagnosis and recommendation system, developing a prototype for the system, and evaluating the accuracy of the decision tree algorithm. The phase of this project is divided into data pre-processing, implementation of the decision tree algorithm, and evaluation of the algorithm and prototype. The decision tree algorithm demonstrated good performance in classifying diabetes mellitus and providing treatment recommendations with accuracy of 98.15% and 98.03%, respectively. To evaluate the model, the model accuracy, precision, recall, F1-score, and confusion matrix were used. The decision tree model in this project is also compared to Naïve Bayes and AdaBoost. The decision tree model shows good performance for this decision-making support model. The development of this decision-making support model holds significant implications for the early diagnosis and effective management of diabetes mellitus. By providing accurate classification and treatment recommendations, this model has the potential to improve patient outcomes and reduce the time for decision-making in the healthcare industry. The project successfully achieved its objectives by analyzing the literature, developing the decision tree algorithm, and evaluating the accuracy of the model. The findings underscore the potential of decision-making support models for improving diabetes diagnosis and treatment recommendation systems.

Keywords: Diabetes diagnosis, treatment recommendation, decision tree algorithm, model accuracy, chronic disease decision-making

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