UNIVERSITI TEKNOLOGI MARA

HAND GESTURE RECOGNITION IN ASD RELATED MOTION USING YOLOv8 ALGORITHM

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JANUARY 2025

ACKNOWLEDGEMENT

Alhamdulillah, praises and thanks to Allah because of His Almighty and His utmost blessings, I was able to finish this research within the time duration given. Firstly, my special thanks go to my supervisor, Sir Muhammad Atif Bin Ramlan because of his guidance. Sir Atif was the one whom I admired the most, especially the one who assisted me in creating this project formulation. He always gave me his advice and alerted me on how to write better in this report. I Am grateful to my supervisor for his patience and managed to have a few times for meeting to keep updating our report progress.

Special appreciation also goes to my family, especially my parents, Mohd Ali Bin Harun and Nurolazmi Binti Sapai for supporting me and encouraging me to further my education and motivating me to give me support especially this project research. Their encouragement really helped me here in creating this project.

Finally, I would like to give my gratitude to my fellow friends for both degree and diploma for helping me understand how to create this proposal including my fellow classmates from T5CDCS2306C1. find myself competitive. I had this urge to always do better than all of them. Since I was working on a particular report for such a long period, many of them were incredibly helpful and never failed to remind me of project due dates, which I occasionally forgot about. I wouldn't be able to complete this report before the deadline without their assistance.

ABSTRACT

The study focuses on designing a Hand Gesture Recognition application by means of the YOLOv8 deep learning algorithm to recognize hand gestures associated with autism spectrum disorder (ASD). The study aims to find out how effective YOLOv8 would be for such hand motions and to train the model with a custom dataset of hand gestures. The prototype developed for evaluation tested the system with Precision, Recall, and Mean Average Precision (mAP)-the F1 score was 83%, certifying further the operational capacity of gesture recognition associated with ASD. The results demonstrate how this can assist in making proper diagnosis and skyrocket systematic understanding into unexplored domains of ASD. Inadequate availability of an exhaustive dataset for ASD motions and the unsuitability of the system to understand intricate ASD-related gestures were flagging hurdles. Engaging into a heterogeneous dialogue with autistic specialists would boost the position of computer scientists on this issue and yield contact to the improvement of more accurate and diverse datasets. To enhance recognition accuracy, integration of other motion features that involved body posture and facial expressions should be completed. Future work should help develop protocols that expand dataset availability and increase the model's accuracy while incorporating some complex AI algorithms to better support these fields in providing clinical and therapeutic applications.

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