UNIVERSITI TEKNOLOGI MARA

EARLY AUTISM SPECTRUM DISORDER DETECTION USING MACHINE LEARNING

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ABSTRACT

This project aims to develop a web-based application utilizing the Random Forest Classification Algorithm to aid concerned parents in detecting potential Autism Spectrum Disorder (ASD) symptoms in their children aged 1-6 years in Malaysia. The application considers various factors, including children's gender, parental income range, and responses to the Modified Checklist for Autism in Toddlers (M-CHAT) questionnaire, to provide risk categorization and recommend nearby support facilities. By offering an online platform, the project addresses the increasing prevalence of ASD and helps parents seek professional support for their children. It also assists parents in preparing their ASD-affected children for primary school by suggesting appropriate assistance options like Program Pemulihan Dalam Komuniti (PDK), Program Pendidikan Khas Integrasi (PPKI), and Program Pendidikan Inklusif (PPI). The project follows a modified waterfall approach, focusing on creating a user-friendly interface and integrating the Random Forest Classification Algorithm for accurate detection. The results show the algorithm's impressive performance with an 86% precision in predicting ASD traits. In conclusion, this web-based application provides a reliable and accessible tool for early ASD detection, empowering parents to assess their children's risk and seek appropriate support. However, the project acknowledges limitations such as a small dataset and subjective questionnaire-based assessments, calling for further attention. Future work involves data expansion techniques, integrating objective measures alongside questionnaires, and collaborating with relevant organizations to enhance the system's capabilities and effectiveness in detecting ASD in Malaysian children.

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