



**INFORMATICS
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In Collaboration with

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**Developmental Dyslexia Detection in Sinhala Speaking School
Children using Machine Learning.**

A Dissertation by

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ABSTRACT

Taking into consideration the impact of dyslexia on school children and its high occurrence rate in society, early detection, and medical intervention is considered very much crucial to bestow a satisfactory level of recovery in affected individuals. This research is carried out on the grounds that screening for dyslexia should be inexpensive and accessible to everyone. Therefore, the idea of a web-based gamified approach seemed to be the best fit for the problem at hand with the support of already available literature and expert feedback. Two hundred and sixty-four children in the age range eight to ten participated in the study and the final system is targeted on Sinhala speaking school children of eight to ten years. A new local dataset was created due to the scarcity of a fitting dataset, and it was used to train the machine learning model. The final product is enriched with a user-friendly web-based game, where the user has to answer ten mandatory linguistic questions in order to get the binary dyslexia prediction. The game element was carefully designed to make it as interesting and child-friendly as possible. Moreover, the game questions were formulated with the help of speech and language consultants, and questions presented in the game are a subset of questions those experts ask in their in-person dyslexia screening clinics. The final prediction was made using the SVM classification model since it is best suited for binary classification problems. The final product is fully end to end tested and thoroughly evaluated by the author as well as different domain experts to make sure the system is defect-free and is performing smoothly as intended.

Keywords:- Developmental Dyslexia, Machine Learning, Dyslexia Screening, SVM, Binary Classification.