A Methodical and Comparative Study for Identify a Solution through Artificial Intelligence for Detection of Visual Impairment in Toddlers and Pre-schoolers

MHK Sammani#, DU Vidanagama

Department of Information Technology, Faculty of Computing General Sir John Kotelawala Defence University, Sri Lanka

Abstract. Pre-schoolers and toddlers are susceptible to near-sightedness and colour blindness, two common eye conditions. The goal of this research is to provide parents with a method for testing for the two eye impairments listed above in children who are illiterate in both letters and numbers that solution is based on Artificial Intelligence technology. Here, a systematic and comparative investigation based on the review of past research, suggestions of Ophthalmologists and Supervisor and a proper survey from the parents who have toddlers, a more effective way to diagnose the aforementioned two eye problems using the techniques of Human-Computer Interaction (HCI) and Machine Learning models are conducted after analysing prior research publications and taking into account the opinions of eye experts. Analysis of the suggestions of Ophthalmologists, Supervisor and reviews of past research, in accordance with the "Ishihara test," and "Hue test" which are still popular today, colour blindness can be identified by choosing hues from a colour palette that has similar colour intensity, and by giving the child to select images that range in size from large to small, parents can determine whether the child has near-sightedness based on the child's outward behaviour. After an analysis of the survey results from parents, more than 60% of people expressed their willingness to identify the above 2 eye defects of children under the guidance of parents through a game suitable for children's minds. The implementation of a straightforward Android game app using the "Expert System" concept to recognize both of the aforementioned eye anomalies was found to be the best solution at the conclusion of this research.

***Keywords**: Artificial Intelligence, Expert system, HCI, Machine Learning Models*