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Fuzzy Logic-based Visual Impairment Level Identification System for Pre-schoolers and Toddlers

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Abstract

Nearsightedness, or myopia, and colorblindness, the two common eye diseases, can affect preschoolers and toddlers. This research is to provide parents with a method for testing the two eye impairments listed above in children who are illiterate in both letters and numbers. Using the knowledge offered by ophthalmologists, comments from parents with young children of survey findings, and pertinent literature, this is to create a mobile gaming application based on Fuzzy Logic, that could evaluate the level of children's Colorblindness and Nearsightedness. The "Ishihara test" and "Hue test," which are still widely used today, can be used to identify color blindness by selecting hues from a color palette that have a similar color intensity, and by allowing children to choose images that range in size from large to small (follow the Snellen Chart), and Preferential Looking Test concept that parents can determine whether their child has nearsightedness based on the child's outward behavior. This mobile gaming application roughly identifies the level of the above two eye defects in young children and refers to medical advice if there is a certain risk level.

Keywords: *Colorblindness, Fuzzy Logic, Mobile gaming application, Nearsightedness*