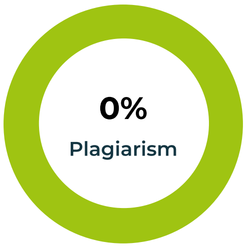
Plagiarism Report



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Content

Literature Study}

Eye tracking has emerged as a promising non-invasive tool for supporting the early diagnosis of Autism Spectrum Disorder (ASD). Several studies highlight the potential of gaze-based measures, coupled with machine learning techniques, to discriminate between ASD and typically developing individuals (TD).

\subsection{\small Eye-tracking Dataset for ASD Research}
Cilia et al.~\cite{cilia2023dataset} introduced a raw eye tracking data set specifically designed for autism research. This data set enables the analysis of gaze behavior to support early detection of ASD. However, it is limited by a small participant pool and short recording duration.

\subsection{\small Scanpath-based Image Representations}
Carette et al.~\cite{carette2019scanpath} proposed a method to convert scanpaths into image representations encoding motion dynamics such as velocity, acceleration, and jerk. These visual encodings were analyzed using convolutional neural networks (CNNs), achieving high classification accuracy (AUC $>$ 0.9). Despite the relatively small dataset of 59 children, the approach demonstrated strong potential for scalable diagnostic applications.

\subsection{\small Fixation Analysis in Short Video Paradigms}
Wan et al.~\cite{wan2018fixation} investigated fixation times of children with ASD and TD (ages 4 to 6) while watching a 10-second video of a speaker. The study revealed significant reductions in the duration of fixation among participants with ASD, particularly in the mouth and body. Using discriminant analysis, they achieved 85. 1\% precision, 86. 5\% sensitivity, and 83. 8\% specificity, suggesting that even short video clips can distinguish ASD from TD children.

\subsection{\small Computer-aided Screening with Deep Learning}
Cilia et al.~\cite{cilia2021deep} combined eye-tracking data with deep learning and data visualization to build a computer-aided screening tool. Their integrated framework demonstrated that gaze patterns could be

reliably classified, underscoring the promise of machine learning-assisted diagnostic systems for ASD.

\subsection{\small Summary}
Collectively, these studies demonstrate that eye-tracking, when paired with artificial intelligence, can provide valuable biomarkers for early ASD screening. While current limitations include small sample sizes and short-duration tasks, the findings establish a foundation for developing non-invasive, scalable, and objective diagnostic tools.

References