**ACM-ASC Internship 2024 Jan-July**

**AI and Disabilities**

**Tag: 3**

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**Problem Title :** Al for Neurodiversity

**Group No:** DIS7

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**Abstract**

Autism Spectrum Disorder (ASD) is a neurodevelopmental disability characterized by atypical traits in behavioral and physiological responses. The current diagnostic process(e.g., DSM-5 or ICD-10) heavily relies on parent interviews and clinical observations, leading to frequent misdiagnoses and prolonged diagnosis cycles. The challenges associated with ASD include the need for timely interventions, as early detection is crucial for effective management. However, the current approach, relying on subjective assessments, often poses significant challenges in achieving accurate and swift diagnoses.

The limitations of parent interviews and clinical observations have been recognized, as they may not capture the full spectrum of behavioral nuances associated with ASD. This reliance on traditional methods often results in delayed interventions, hindering the well-being of affected children. Doctors typically undergo extensive clinical training to interpret subtle cues like repetitive movement patterns, gaze patterns, and speech analysis, contributing to a time-consuming and resource-intensive diagnostic process.

In response to these challenges, our initiative proposes a groundbreaking approach by integrating deep learning and artificial intelligence. We aim to create a stacked model that considers various cues, providing a more comprehensive and accurate assessment of ASD. By automating the diagnostic process, we seek to alleviate the time and resource burden on healthcare professionals and parents, enabling more timely interventions and support for ASD children.

However, challenges persist even in previously published papers focusing on ASD. Many existing studies tend to utilize single or dual techniques, potentially limiting the breadth and depth of the diagnostic insights. Our initiative addresses this limitation by adopting a multimodal approach, incorporating repetitive movement patterns, gaze patterns, and speech analysis into a comprehensive model. By doing so, we aim to surpass the accuracy achieved in traditional clinical trials and previous research efforts.

In summary, our initiative addresses the shortcomings of current ASD diagnostic approaches by leveraging advanced technologies. Through a comprehensive and multimodal AI model, we strive to enhance accuracy, reduce diagnostic timelines, and ultimately improve the lives of individuals affected by ASD. The challenges faced in existing approaches serve as a motivation for our innovative and holistic solution, aiming to contribute to a more effective and inclusive paradigm for ASD diagnosis and intervention.

**Problem Statement**

