APPLICATION OF ARTIFICIAL INTELLIGENCE MACHINE LEARNING TO DIAGNOSE AND TREAT NEUROBEHAVIORAL DISORDERS, SPECIFICALLY AUTISM

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Current tools utilized to diagnose neurobehavioral disorders such as autism are time consuming and require specialized training. The length of the current standard exam as well as the need for administration in a clinical facility contributes to delay in diagnosis and an imbalance in coverage of the population needing attention. Families typically wait months between initial screening and diagnosis and even longer if part of a minority population or lower socioeconomic group. These delays directly translate into postponements to the delivery of early intervention services, which if started before 36 months have the potential for significant and positive impacts on a child's development. Based on the initial work of Dennis Wall, PhD at Harvard and Stanford Universities, Cognoa, Inc has developed a proprietary machine learning algorithm to detect autism spectrum disorder with high accuracy in children ages 18-72 months utilizing a questionnaire and analysis of short videos of the children provided by the parent. Clinical validation of the algorithm was done in a multi-center clinical trial at three tertiary care centers specializing in autism diagnosis (The Thompson Center at the University of Missouri, Vanderbilt University, and the University of South Carolina). Receiver operating characteristic (ROC) curves for current screening tools versus Cognoa's algorithm demonstrate superiority. Furthermore, the average age of children identified by Cognoa as high-risk for autism was 3.08 years old, which is 13 months sooner than the US national average for autism diagnosis of 4.17 years. This earlier identification affords parents the ability to seek help for their children during the critical treatment window for which the software provides home based developmental activities based on the features identified during the assessment.

Biography

Sharief Taraman, MD is the Vice President of Medical at Cognoa, Inc., a startup utilizing artificial intelligence machine learning to diagnose and treat neurobehavioral disorders, specifically autism. He is also the Assistant Division Chair of the CHOC Children's Specialists Pediatric Neurology Division and a Health Sciences Assistant Clinical Professor at UC Irvine School of Medicine. He is board certified in Neurology with special qualifications in child neurology from the American Board of Psychiatry and Neurology as well as in Clinical Informatics from the American Board of Preventative Medicine. He is a *magna cum laude* graduate of the University of Michigan having majored in Biochemistry. He completed his medical education at Wayne State University School of Medicine in 2006 and went on to complete Residency training in Pediatrics and Pediatric Neurology at the Children's Hospital of Michigan.

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