Collaborative Proposal

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MindGame: An Interactive Puzzle Game with Wearables and AI to monitor effect of medication on ADHD symptoms

The proposed URI proposal aims to develop strong and foundation preliminary data for a multi-year NIH R01 grant (targeted in fall 2025). Over 366 million adults worldwide suffer from Attention Deficit Hyperactivity Disorder (ADHD) that manifests through hyperactivity, inattention, and impulsivity, impacting daily functioning. Since ADHD is a chronic neurodevelopmental disorder, symptoms progress through adulthood. Academic, professional, and interpersonal challenges are common in young adults with ADHD, leading to performance issues, stress, and depression. While no cure exists, pharmacological interventions and behavioral therapy are used to manage symptoms. Monitoring ADHD behaviors at home relies heavily on subjective self-reports, although valuable, can be subjective and inaccurate.

Our innovative solution, "MindGame", integrates a digital puzzle game with smartwatch and Artificial intelligence (AI) to monitor ADHD symptoms in real-world settings. Our proposed research plan has two aims:

We will conduct an in-lab study on 40 young adults (20 ADHD and 20 neurotypical) who will be asked to play the puzzle game while wearing a smartwatch. The study will produce a set of time-series data along with clinical information of the participants.

The dataset will be prepared to generate an end-to-end AI model that can differentiate hyperactivity behaviors.

Award: $29,918