

## **FACULTY MENTOR**

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## **PROJECT TITLE**

Developing an ability-responsive, mobile cognitive training interface for individuals with affective symptoms

## **PROJECT DESCRIPTION**

Cognitive abilities form the fundamental structure for how we perceive, interpret, and interact with the world. Problems with cognitive functioning are ubiquitous in many different types of psychiatric disorders, and are associated with symptom exacerbation and poor functional outcomes. Accordingly, there has been increased interest in developing targeted interventions that can improve cognitive functioning and potentially also alleviate symptom burden. The investigating team developed a computer-delivered cognitive training intervention that involves intensive practice with targeted working memory exercises, and has shown that this program effectively modulates cognition and symptoms in those who have experienced psychological trauma. Delivery of this system would ideally involve remote access (e.g., a web or application based interface) in order to facilitate administration and adherence by patients. In addition, an optimization algorithm is needed to ensure that cognitive training difficulty matches the patient's skill level based on prior trial performance and learning trajectory – essentially an efficient frontier to maximize potential training gains using increasingly challenge exercises while minimizing risk of patient frustration or fatigue. Thus, the administration format and adaptive challenge component require innovative computational and technology solutions that have to date been unmet needs. The project would involve design of a novel interface system and associated modeling of cognitive responses.

## **INTERNS NEEDED**

1 BS or MS

## **PREREQUISITES**

Experience with app development sufficient to design and implement prototype of task

