Cognitive impairment can be induced by conditions ranging from PTSD to the early onset of dementia (a symptom of Alzheimer’s). However, there is currently no way to inexpensively, non-invasively, and accurately identify mild cognitive impairment. This presentation reports on the development and initial assessment of a tool that measures cognitive processing speeds under varying conditions, such as sensory dissonance, where a subject is presented with simultaneous conflicting sensory cues, as a leading indicator for mild cognitive impairment.

Initial results indicate that it takes longer for a subject with mild cognitive impairment (7.4 seconds) than the demographic equivalent without that impairment (3.1 seconds) to process and respond to conflicting sensory cues under conditions of sensory dissonance.

A Bayesian classifier was then created to compute the probability of a subject having a cognitive impairment based on their test performance. This classifier was deployed as an iPad app, with results showing that the model is accurate in detecting cognitive impairment after a <5-minute test.

So far, this study lays the foundation for the successful application of sensory dissonance monitoring as an assessment of the level of a subject’s cognitive impairment, and the inexpensive testing approach developed could viably be applied in primary care settings and be a substitute for more expensive and invasive procedures such as MRIs and EEGs. In the future, several other factors, such as the ability to hold a coherent conversation, characteristic changes in typing patterns, and semantic memory capacity, will be examined to develop a battery of tests that can together be used to identify conditions such as Alzheimer’s.