Brain regions associated with future cognitive decline
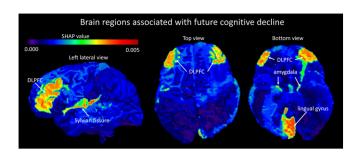
FEATURED JH AITC GRANT YEAR 1 AWARDEE:

Suppose you visit a clinic because you feel your memory isn't as good as it used to be. You might undertake a cognitive function test or an MRI scan of your brain and be told that the results are "normal." This perceived memory loss may still be a predictor of dementia onset even before the MRI is sensitive enough to pick up changes. A Johns Hopkins team at the Richman Family Precision Medicine Center of Excellence in Alzheimer's Disease, in collaboration with experts from the Johns Hopkins Applied Physics Laboratory, is working to increase measurement accuracy from information available via MRIs to make more robust predictions. The team used machine learning to identify brain features in an MRI scan that predict future cognitive decline. When this machine learning model was applied to brain scans from patients from the JHU memory clinic, it successfully predicted cognitive decline two years later. The team will delve deeper into electronic medical records to identify individual risk factors for future cognitive decline with the goal of identifying patients at high risk and targeting interventions to prevent or delay dementia onset. The use of MRI scans coupled with data from electronic medical records will not just benefit the patients directly in the clinic, but also aid healthcare providers examining and monitoring them and drive insights that pharmaceutical companies may use in the development of dementia-preventing drugs.

Information about the Richman Center can be found at https://www.hopkinsmedicine.org/inhealth/alzheimers.

INTRODUCING THE CLINICAL TRANSLATION AND VALIDATION CORE: A HUB FOR INNOVATORS AND A CLINICAL LABORATORY

The JH AITC introduces a vital component, the Clinical Translation and Validation Core (CTVC). Tailored to foster the application and validation of artificial intelligence (AI) in clinical environments, the CTVC aims to pioneer AI prototype testing and exploratory studies. This initiative ultimately assists in the development of large-scale, confirmatory pilots crucial for creating effective AI technologies to support older adults' independence.

The five-pronged mission of the CTVC is: (1) recognizing and selecting innovative AI methods and technologies for clinical validation; (2) building and maintaining a research registry that tracks evolving AI approaches and technologies; (3) providing comprehensive training and mentorship in human subjects research; (4) pairing AI researchers with suitable clinical investigators for successful validation and feasibility testing of prototypes; and (5) assisting in transitioning validated prototypes into pilot studies. CTVC enables innovators to validate prototypes and conduct rigorous feasibility testing for AI algorithms and technology devices in both clinical and real-world settings. This core assists innovators in turning their innovative ideas into tangible clinical applications, playing a significant role in supporting aging adults and individuals with AD/ADRD.

The CTVC is led by Dr. Rama Chellappa, an experienced AI and technology development investigator, and Dr. Peter Abadir, a geriatrics clinician scientist with a focus on translational research about physical and cognitive decline in older adults. Together, they facilitate the core's operations and testing process. A highly skilled research program manager specializing in older adults' recruitment and frailty and mobility measurements further supports these efforts. The CTVC's goals are achieved through the collaborative effort of all core leaders. Additionally, resources from the JHU Institute of Clinical and Translational Research and FastForward contribute to ensuring optimal study design, implementation, measurement, and interpretation of results; they play a crucial role in accelerating health technology development that uses AI to maximize independence in older adults.

MONTHLY WEBINARS

For July, a prerecorded session is offered, featuring **Dr. Phillip Phan** presenting **"Pitching Your Venture."**

It can be viewed at https://aitc.jhu.edu/monthly-webinars/ or by scanning the QR code below.

For August, **Chris Chute** will present **"Data Sharing Vision."** Register for his talk by scanning the QR code below.

UPCOMING EVENTS

Deadline for preliminary applications for the Third Annual a2 Pilot Awards: **July 31, 2023**

Learn more at https://www.a2collective.ai/pilotawards or by scanning the QR code below.