Stanford

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Bio

BIO

My research bridges Veteran mental health, brain injury, and computational neuroscience through the development of artificial intelligence (AI), machine learning (ML), and real-world data methods to improve cognitive and rehabilitation outcomes among high-risk Veteran populations. My work focuses on the intersection of traumatic brain injury (TBI), neurodegeneration, substance use disorders, and psychiatric comorbidities, with an emphasis on understanding heterogeneous cognitive trajectories among Veterans. At the C-BRAIN Lab, I collaborate on computational approaches that integrate multimodal electronic health record (EHR) data, neuropsychological assessments, clinical narratives, and longitudinal health outcomes to better characterize cognitive impairment and recovery processes. My current research develops AI/ML phenotyping methods to distinguish potentially reversible cannabis-related cognitive impairment from progressive neurodegenerative disorders using large-scale Veterans Health Administration (VHA) data.

My long-term research goal is to advance precision rehabilitation and cognitive health strategies for Veterans with complex neurological and psychiatric conditions, including TBI and spinal cord injury (SCI). By combining computational neuroscience, causal inference methods, and patient-centered outcomes research, I aim to identify high-risk individuals earlier, improve cognitive outcome measurement, and inform more effective rehabilitation and mental health care strategies within and beyond the VA healthcare system.