PhD Recruitment

Professor **Xiaohui Liang** is leading a collaborative and multi-disciplinary research team working on "Exploiting Voice Assistant Systems for Early Detection of Cognitive Decline." His collaborators are Professor **John Batsis** (geriatric medicine physician) and Professor **Robert Roth** (neuropsychologist) both from Dartmouth Hitchcock Medical Center, Professor **Brian MacWhinney** (computational linguist) from Carnegie Mellon University, and Professor **David Kotz** (computer scientist) from Dartmouth College. Their project is recently funded by the National Institutes of Health (NIH) National Institute on Aging (NIA) as R01 with 1.2 million for 9/2019-9/2023. Professor Liang will recruit multiple Ph.D. students as RAs, who are interested in working on this promising project and preferably has research experiences related to voice analysis, data mining, deep learning, and mobile computing. Professor Liang is currently an Assistant Professor at the Computer Science Department of the University of Massachusetts Boston. For more information about Professor Xiaohui Liang, check http://www.faculty.umb.edu/xiaohui.liang/.

This research team is hugely enthusiastic about the research on exploiting the voice data from the Voice Assistant System (VAS), such as Amazon Alexa, Google Home, for health purposes. The total audience of smart speakers in the US reached 54.4 million in 2018. The VAS data collection is practical as it is low-cost, passive, continuous, human-to-AI, and related to daily human tasks. This project will develop an invaluable voice dataset on individuals ($>$ 2 years) that is larger in size than any previous similar research projects. The impact and follow-up work will be immense. In this project, we focus on the assessment of cognitive decline over time. Early detection of the cognitive decline involved in Alzheimer's Disease and Related Dementias (ADRD) in older adults living alone is essential for developing, planning, and initiating interventions and support systems to improve patients' everyday function and quality of life. Conventional, clinic-based methods for early diagnosis are expensive, time-consuming, and impractical for large-scale screening. This project aims to develop a low-cost, passive, and practical home-based assessment method using VAS for early detection of cognitive decline. If successful, the proposed system may be widely disseminated for the early diagnosis of cognitive impairment to complement existing diagnostic modalities that could ultimately enable long-term patient and caregiver planning to maintain individual's independence at home. For more information about the project, check https://sites.google.com/view/voiceforhealth/home

Join the team and be the pioneer by sending your CV to Xiaohui.liang@umb.edu.