Step by Step: Predicting Alzheimer's Disease with Wearable Technology

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Alzheimer’s Disease (AD) represents a significant and rapidly growing burden to the healthcare ecosystem. In the USA alone, about 5 million people suffer from the disease that costs the managed healthcare system over $250 billion; worldwide, the number increases to 44 million. The prevalence of AD has increased by 89% since 2000 and is currently the sixth-leading cause of death, underscoring the need for interventive and preventative measures. A growing body of evidence indicates that sensory, cognitive, and motor changes may precede clinical manifestations of AD by 10 or 12 years. The goal of this research project was to find and monitor these digital biomarkers through passive data collection with a smartwatch based app. Once biomarkers are identified, the app notifies the user that there is something out of the normal with their longitudinal rate of progression of neurological health, allowing them to seek further clinical assessment and take interventional measures to stop the progression of the disease. The FitBit based app collects and analyzes two digital biomarkers that have been previously shown to predict AD: gait speed and heart rate variability.

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