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Data analysis for an eldercare sensor network
Jairon Scott and Marjorie Skubic

The average life expectancy in the U.S has grown. However, as older adults age, one can expect to see a decline in their functional ability. An interdisciplinary research team at the University of Missouri has been developed to help older adults maximize functional ability. Our team has implemented a number of sensors at the TigerPlace facility that will allow us to monitor the residents that live there. My role in this project, along with my project team members, is to organize the data and generate graphs that show the day to day patterns of the residents. Sensor data have been logged into a database from sensors that are set up in the resident's apartment's in the following places: entryway, kitchen, living room, bedroom, bed, closet, bathroom, and shower. Data retrieved from the database are saved in a Matlab structure. We then develop algorithms and code to analyze the data and generate different graphical representations. We're also computing the mean and standard deviation of daily sensor firings to help recognize an increase or decrease in daily activity. Following these processes, we hope to develop a universal algorithm that can be used to determine when a decline in functional ability in older adults is about to occur so that appropriate interventions can be taken to help them maintain their level of functionality.