Using Data-Driven Frequency Analysis Techniques to Detect Seizures and Falls

Helmy, Amir

Over 70 million people worldwide and 5 million in the U.S. have epilepsy and millions of people fall each year with hundreds of thousands hospitalized. Despite the high number of fatal falls and seizures that there are, there are no adequate available solutions to detect these emergency scenarios as soon as they happen and alert someone else to ultimately reduce emergency response times and save lives. The mobile application Seizario (the app that was developed as a result of this scientific investigation) aims to do this. Through this project I utilized frequency analysis techniques such as Fast Fourier Transforms to look at accelerometer readings used to detect these emergency scenarios is a novel way. This helped me enhance my existing detection algorithm which lead to the detection of new kinds of seizures, increased sensitivity, while also decreasing false positives.

Awards Won:

Second Award of $2,000

Oracle Academy: Award of $5,000 for outstanding project in the systems software category.