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CS315 : Data Mining
Project Proposal

Human Activity Recognition

1. Data Mining Task: What is your data mining task? This task could be a series of exploratory questions that you want to investigate or analyze. What is your motivation behind choosing this problem for your project?

The data mining task that we are looking to accomplish is human activity recognition (HAR) utilizing either smartphone or watch data. The motivation is that the healthcare industry is trending with its adoption of artificial intelligence. It aligns with personal interest towards developing mobile health technology in the fitness industry. I foresee smart gym's rising as the internet of things begins to integrate with equipment.

2. Dataset: What is the source of your data?

The source of our data is from UCI : Machine Learning Repository or the following citation depending on the response of open usage of the provided dataset.
Sunwoong Choi, Min-Cheol Kwon, and Geonuk Park, "Smartwatch user interface implementation using CNN-based gesture pattern recognition," Sensors (Switzerland), vol. 18, no. 9, 2018.

3. Methodology: How will you solve the data mining task? You should have some idea of the algorithms or software tools you plan to investigate.

In order to solve the data mining task we are going to utilize convolutional neural networks and recurrent neural networks. The software will be Python, Pytorch and Tensorflow. There may potentially be other methods involved such as back-propagation.

4. Final product: What will be the outcome of this project? How will you measure the success of your course project? Will this project help you explore or learn something new?

The outcome would to classify a group of data points as a specific movement such as walking, sitting and standing. The measure of success would be to determine accuracy of the algorithm to correctly identify various activities. This project will help us learn how to utilize deep learning frameworks such as PyTorch and or Tensorflow on data from smartphones. Depending on the progress we may collect and export our own data from an Apple Watch 3 in order to explore personal data that could shared back to the community.