**ME 532: Matrix Methods in Machine Learning**

**Project Proposal**

Dataset

The dataset used for this project is the **Fashion-MNIST** data from Zalando’s article images. The data consists of image examples each of which is a 28x28 pixels greyscale image. Thus, there are total 784 pixels in an image. Each pixel holds a value from 0 to 255 denoting the brightness of the pixel. The location of each pixel in the image is defined by the equation , where the xth pixel lies in the ith row and jth column of a 28x28 matrix. Each article can be associated to one of the 10 labels mentioned later. There are 60,000 examples in the training data and another 10,000 in the test data. The goal of this project is to develop a machine learning classification algorithm that can accurately classify a given article to its corresponding label by understanding the pixel composition of the image.

The labels are as followed:

0 - T-shirt/top

1 - Trouser

2 - Pullover

3 - Dress

4 - Coat

5 - Sandal

6 - Shirt

7 - Sneaker

8 - Bag

9 - Ankle boot

Proposed algorithms

1. Linear regression
2. K-means clustering
3. Neural networks

Timeline

Link to github