I am Xuan Zou, a CS master students in UC Berkeley. My current concentration is Deep Learning and doing a research about understanding deep neural network through visualization. Through this course, I want to learn how parallel computing can be used in different discipline to solve practical problems. If possible, I want to apply parallel programming in my project to speed up the neural network training process.

**Speed up convolutional neural network by parallel computing**

Neural networks are used to make prediction based on the feature your data and their response. In convolutional neural network, every layer acts as a filter for some features or patterns in the original data. In recent years, deep convolutional neural network is widely used in image classification and face recognition. While when the number of layers increase, it will cost many days even weeks to train the network.

I plan to use multi-core processing to speed up this process. Firstly, We can use multiple cores to process many images at once at each layer. Secondly, we can use multiple cores to perform SGD of multiple mini-batched in parallel. Below is the parallel parameters updating process.