

# CS 289A – Project Proposal

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## I. Context

Last summer I worked for a logistics company. The company developed a mobile application connecting cargo drivers and clients. Drivers have to take a picture of cargo boxes against the background of delivery locations as a proof of completing delivery. Some drivers are so reckless that they shoot arbitrary pictures as they know nobody checks them. They are somewhat correct: the number of pictures went up to hundreds thousands after two years, which deterred anybody who ever thought of checking them manually. The image database was left unattended and the problem remained unsolved for a long time until I come...

## II. Project Proposal

### 1. Objective

My project is to develop a model to recognize if there is a package in a given image. That is my model will classify images into two categories: “package” and “no package” after being trained on a huge sources of image data.

Potential implementation: the model will classify “package” images into two subcategories: ‘box’, ‘bag’.

### 2. Methodology

After reviewing literature, I learned that the convolutional neural network (CNN) model is very efficient for the tasks of image recognition and image localization. This method, however, is painful to implement typically for medium to large-size project. Thus, I make use of TensorFlow which is a machine learning library developed and made open by Google Brain. The library provides data structure of tensor and support parallel computation on tensor data type.

Possibly, I am thinking of implementing one of the classification methods learned from the lectures, comparing two models and reasoning on their efficiency.

### 3. Data and Tools

Data sizes: ~ 60,000 images

Tools: Python 3, TensorFlow

### 4. Challenges

Most challenges come from the nature of data set. First, the data is raw data. That is all images have not been labeled yet. I will have to spend some time on labelling them for training and testing purposes. Also, the images are so diverse: they have different sizes, shot at different angles, in different light/weather conditions, with different resolution, etc.

I am not very familiar with TensorFlow, but it is a good chance to learn. Let’s see!