

## **M1 Report**

### **1. Current State of Project**

The dataset for the ML part is almost ready. The dataset is based on the Fruit 360. Another dataset is added into the basis one after deleting some repeated pics (Now this dataset is cited in the proposal). More images are added by using Bulk Bing Image Downloader. After these three steps, the dataset contains over 90000 images and since Fruit 360 is the dataset just rotating one object, the decision is to reduce the part of Fruit 360. Meanwhile, the different categories of the same fruit-vegetable are combined into one folder (including the images from the second dataset and Bing). The last step is numbering images then separating 'Test' and 'Train' sets with 3:7 proportion. This is the link to get the dataset:

[https://drive.google.com/file/d/1iH\\_ytlrmS1WhU4Z5EvDflFDQZpSPewcN/view?usp=sharing](https://drive.google.com/file/d/1iH_ytlrmS1WhU4Z5EvDflFDQZpSPewcN/view?usp=sharing)

The model is currently a work in progress. It hasn't been fully assembled as we're still reading about how to use MobileNet v2 from a TensorFlow guide. So it will take more time to fully understand how it works, and we are also interested in possibly switching to the latest version of MobileNet (v3).

TensorFlow guide:

[https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/images/transfer\\_learning.ipynb#scrollTo=KpbzSmPkDa-N](https://colab.research.google.com/github/tensorflow/docs/blob/master/site/en/tutorials/images/transfer_learning.ipynb#scrollTo=KpbzSmPkDa-N)

### **2. Changes to Proposal**

We have found more ways to make our application lightweight and built the basic structure of integrating everything together. However, we have moved some goals for earlier milestones to later milestones, such as shifting the 90% model accuracy goal to milestone 3. This was due to having a programming assignment, midterm, and lab throughout the week. We also introduced new ways to gather images for our dataset, such as the Bing Image Downloader. More risks are mentioned after preparing the dataset and studying for the MobileNet model.

### **3. Current Challenges**

1. The dataset certainly does not contain all fruits and vegetables, as mentioned in the proposal, showing "no result" and adding a suggestion box in the web front-end could be considered.
2. The dataset is more huge than expected one, the training time might be a problem.
3. Another risk needs to be mentioned is that many fruits have very similar appearance, the ML model might be hard to distinguish between them.

#### 4. Team Contributions

Jeremy has changed some parts of the proposal to finalize it for milestone 1. He is currently working on assembling the MobileNet model by looking at several Keras and TensorFlow guides on how to initialize and pass images to the model.

Aryan is currently working on building the web app (mostly server communication, upload files feature). He will integrate the ML model into Flask API, and then subsequently make API calls to the recipe fetching server based on the predicted ingredients. He is currently learning the front end development tools and techniques.

Ting writes some tools to the process of combining, sorting, numbering steps, makes the dataset for the ML model, identifies and adds some risks that might be involved in the process of creating the dataset. She is now considering how to integrate front, back ends (might be in java) and MobileNet model (in python).

Rushil is currently looking for ways to incorporate recipes, specifically looking for a suitable recipe API to use.