



PEAR Project Documentation

Feel free to email me at kt2965@columbia.edu with any questions!

Information about the code

- Download the required Python libraries:
 - a. Pip install numpy
 - b. Pip install tensorflow
 - c. Pip install keras
 - d. Pip install random
- main.py contains the code to train the model on the dataset
- Input.py contains the prediction script that takes in a folder of point clouds as input

How is the file system formatted?

- 3-apple-point-clouds - Contains the apple point clouds
 - Split into advripe_2018 and unripe_2020 containing ripe and unripe point clouds
 - Each folder is then filtered into test and train for training and evaluating the model respectively
- advripe_test - contains ripe point clouds as test inputs
- unripe_test - contains unripe point clouds as test inputs
- saved_model - where the weights for the trained model are stored

Information about the dataset

- PEAR utilized the PFuji-size dataset -
<https://www.sciencedirect.com/science/article/pii/S2352340921009045#bib0003>
- This dataset was split into two different stages of maturity (advanced ripeness and unripeness)
- A third folder, lab2020 (containing point clouds taken in a lab setting) was not used
- Each point in the point cloud is formatted as XYZ coordinates followed by RGB values followed by unknown values (which is why each point is shortened to only the first 6 values): [x, y, z, r, g, b, ...]