

Name: Jiliang Ni

ID: 81224742

In this project, I implemented the algorithm of hand detection and the whole pipeline of the model. I wrote the code for creating the model and I wrote the code for preprocessing the data. Finally, I took photos of me and tested the model on these new images. I also wrote the README.md file and the project.ipnb file. In the report, I wrote the sections of “4. Description of Technical Approach”, “4. Software”, “5. Experiments and Evaluation” and “6. Discussion and Conclusion”.

For details, I first used the YOLO and the TensorFlow model used in my assignment 4 to deal with this project. But I found they were not good enough. Then, I watched the tutorial of TensorFlow Object Detection API. Then, I began to use this API.

Firstly, I wrote a python script to use cv2 method “imread” to read the images and then I wrote a python script to resize the data from 1920 * 1080 to 320 * 180, because TA told me that resizing will make the process easier. Then, I wrote a python script called “Get_TFRecord.py”, which is in the “src\models-master\research” directory to transfer the data to TFRecords format, because the TensorFlow Object Detection API only accepts TFRecords. Then I created the configuration file of our model which is “faster_rcnn_resnet50_coco.config”. I set the batch_size as 1, num_examples as 8000, and num_steps as 1000. The RCNN model is indeed better than the models I used before because of its efficiency and the ability to deal with non-classification problems like object detection.

After training the model, I produced the model as a directory, which is called “CS175RCNN_Model” and in the project directory. When you run the project.ipnb file, you will find that I use this model.

Also, I took some photos of myself and put them into the “New_data” directory. I found the RCNN model predicts these images really well. It has a high confidence which is more than 90%. I deleted some photos in “New_data”, because the requirements said, “keep your data sets to 5MB in total or less”.

From this project, I learned that the problems in practice may be really different from the problems shown in classes. I changed a lot of parameters in the model and finally found the speed of training is a really important criteria for accessing the model.