

EE / CprE / SE 491 – sdddec20-proj01

PROJECT TITLE : Machine learning for pilot biometrics

Week 1-2 Report

1/20/2020 – 2/2/2020

Client: Rockwell Collins

Point of contact: JR Spidell

Faculty Advisor: Akhilesh Tyagi

Team members:

Jianhang Liu--Hardware SME

Feng Lin--Inference SME

Xuwen Jiang --- Hardware SME

Xiuyuan Guo --- Algorithm SME

Sicheng Zeng - python SME

Junjie Chen --- C code SME

Sicheng Zeng - Team leader

Bi-weekly Summary

We are currently starting our project and finish building environment on Anaconda. On Jan 22, we have our first video conferencing with our client and introducing ourselves. We learned Neural Network on Youtube. All team members using python to plot the data in 3D space on jupyter notebook in order to testing our anaconda environment is working well. We also learned Algorithm that our client sent to us.

Individual Contributions

Team Member	Contribution	Hours Worked for the Week	Total Cumulative Hours
Junjie Chen	Made initial contact with JR spidell, faculty members. Setup anaconda environment, learned computer vision algorithm, contribute in Gantt Chart	8 hrs	8 hrs

Feng Lin	Setup environment for anaconda spyder and jupyter, plotting the graph by given csv file from client. Combine all team members schedule. Find and share Gantt Chart template for our team.	6 hrs	6hrs
Sicheng Zeng	Set up the machine learning environment Write Gantt Chart Learning python in coursera Discuss with sponsor and teammates	6 hrs	6hrs
Xuewen Jiang	Set up Anaconda environment on my PC. Learning Neural Network, Python and Algorithm for the project. Using python to plot the following data in 3D space on jupyter notebook. Help build Gantt Chart with group member.	6hrs	6hrs
Xiuyuan Guo	Set up the environment of a personal computer for further working. Test the environment by having the code given by the sponsor run successfully. Also, discussed with team and find out what we should do for the further step.	6 hrs	6 hrs
Jianhang Liu	Set up the Anaconda environment of the PC for future working, using Spyder to test code, help contribute to the Gantt Chart, reviewed basic FPGA knowledge.	6 hrs	6 hrs

Pending Issues

1. Machine learning basic knowledge is still a little unfamiliar among team
2. Still waiting to receive the hardware from sponsor
3. Need to improve the accuracy of the given algorithm
4. Need to set up the hardware and put the code in hardware

Plans

1. improve the accuracy and reduce the latency of the existing machine learning algorithm.
 - 1) Use an accelerator (Xilinx FPGA logic)
 - 2) Change the algorithms in some way
 - 3) Change the (hyper) parameters of the algorithms
 - 4) Recode the algorithms in a non-interpreted language (python is interpreted on run time)
 - 5) Prune the network
 - 6) Use tools to analyze the data and pre-manipulate the data prior to inference
2. set up the hardware and run the machine learning algorithm in hardware
3. Continue learning the hardware and Ultra96 SW environment