

## EE/CprE/SE 491

# HAML: Heterogeneous Computing for Machine Learning Algorithms

## Week 6 Report

2/20/24 - 2/26/24

Faculty Advisor : Phillip Jones

Client : JR Spidell

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### Team Members:

Jonathan Tan	- DPU Management, Kria Board Manager
Josh Czarniak	- Pupil Center Location Algorithm
Justin Wenzel	- Blink/No-Blink Algorithm, Meeting Leader of the Week
Kai Heng Gan	- OpenCV
Santiago Campoverde	- Data Profile/Model Analytics

### Summary for Progress This Week

This week's objectives were to continue with regular meetings and meet with Rudy, who was working on this project in previous Senior Design semesters. We met with Rudy to better understand the development environment and the inner workings of previous team's program. During the client meeting, our client answered and clarified technical questions to assist the groups understanding. As of now, we have a better understanding of the overall process and data flow.

### This Week's Individual Contributions

- Justin
  - Lead team and client meetings for the week.
  - Researched into Docker environment to support our environment.
  - Meet with previous team to discuss past implementations and previous project details.
- Jonathan
  - Communicated with ETG to get workstation set up in Coover 1301.
  - Set up development environment on workstation in Coover 1301, passed on to Justin to try setting up on his Windows computer to verify that we can run our development environment on a Windows (we want to avoid RHEL8 if possible).
  - Asked clarification questions during client meeting to help the team better understand the project as well as prepare document for coming advisor meeting to help advisor better grasp the context of this project.
- Josh
  - Researched further on blink detection
  - Studied previous team's code

- Worked on multi-threading slides and presentation for the team
- Kai
  - Wrote the code of image pre-processing that could crop, resize, and remove glare of the image.
    - An image took 5ms to finish image pre-processing (without pipeline)
    - Still working on the image pre-processing pipeline
- Santiago
  - Read through document on Improving Prediction Accuracy
  - Investigated VALGRIND framework

Team Member	This Week's Task	Completion Date	Hours Took	This Week's Hours	Total Project Hours
Justin Wenzel	Attended/Lead meetings	NA	3	5	21
	Researched into Docker environment for environment	2/26	1		
	Meet with previous team to discuss past project details and implementations	2/26	1		
Jonathan Tan	Attended meetings	NA	3	7	22
	Communication w/ ETG and setting up env on workstation.	2/26	3		
	Preparation for explaining to advisor during coming advisor meeting.	ongoing	1		
Josh Czarniak	Attended meetings	NA	3	10	27
	Looked at previous team's code	2/25	4		
	Work on multi-threading slides	2/26	3		
Kai Heng Gan	Attended meetings	NA	3	6	24
	Wrote the code of image pre-processing that could crop, resize, and remove glare of the image.	2/24	3		
Santiago Campoverde	Attended meetings	NA	3	6	22
	Read through document on Improving Prediction Accuracy	2/23	2		
	Investigated VALGRIND framework	2/23	1		

Note: 1. This is per week hours,  $\Sigma$  "hours taken" = "week hours". 2. Due to multiple meeting times, meetings' "completion date" are "NA".

## Plans for Coming Week

Team Member	Plans for Coming Week	Planned Completion	Planned Hours Required
Justin Wenzel	Finish setting up Docker to manage the team's working environment.	2/29	2
	Research into bounce diagrams/code mapping for VART.	3/3	2
Jonathan Tan	Learn how to compile h5/pb model files into xmodel. (side quest, low priority)	3/29	5
	Assist Justin in figuring out the best way to set up our team's development environment.	3/1	1
	Start thinking about DPU sharing methods and make PPT for it.	3/8	5
Josh Czarniak	Understand more about machine learning	2/29	5
	Continue work on multi-threading slides	3/1	3
	Understand more of the previous Teams code	2/28	3
Kai Heng Gan	Have 1:1 meeting with client to discuss about image/video processing.	3/2	1.5
	Research on the segmentation technique on video/image processing	3/2	4
Santiago Campoverde	Research on methods to improve prediction algorithm	3/1	2
	Familiarize with other profiler tools	3/1	3