

UE20CS390B - CAPSTONE PROJECT PHASE - 2

EXPLORING THE FEASIBILITY OF FORWARD FORWARD ALGORITHMS IN IMAGE PROCESSING

PROJECT PROGRESS REVIEW #1

Project ID : PW23_SJ_06

Project Guide : Prof. Suresh Jamadagni

Project Team : Swapnil Nair, Suraj Gautham, Mridul Khurana, Mohammed Assadi

OUTLINE

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- **CAPSTONE PROJECT PHASE – 1**
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- **DEMONSTRATION AND TESTING OF THE COMPLETED MODULES.**
- **GANTT CHART**

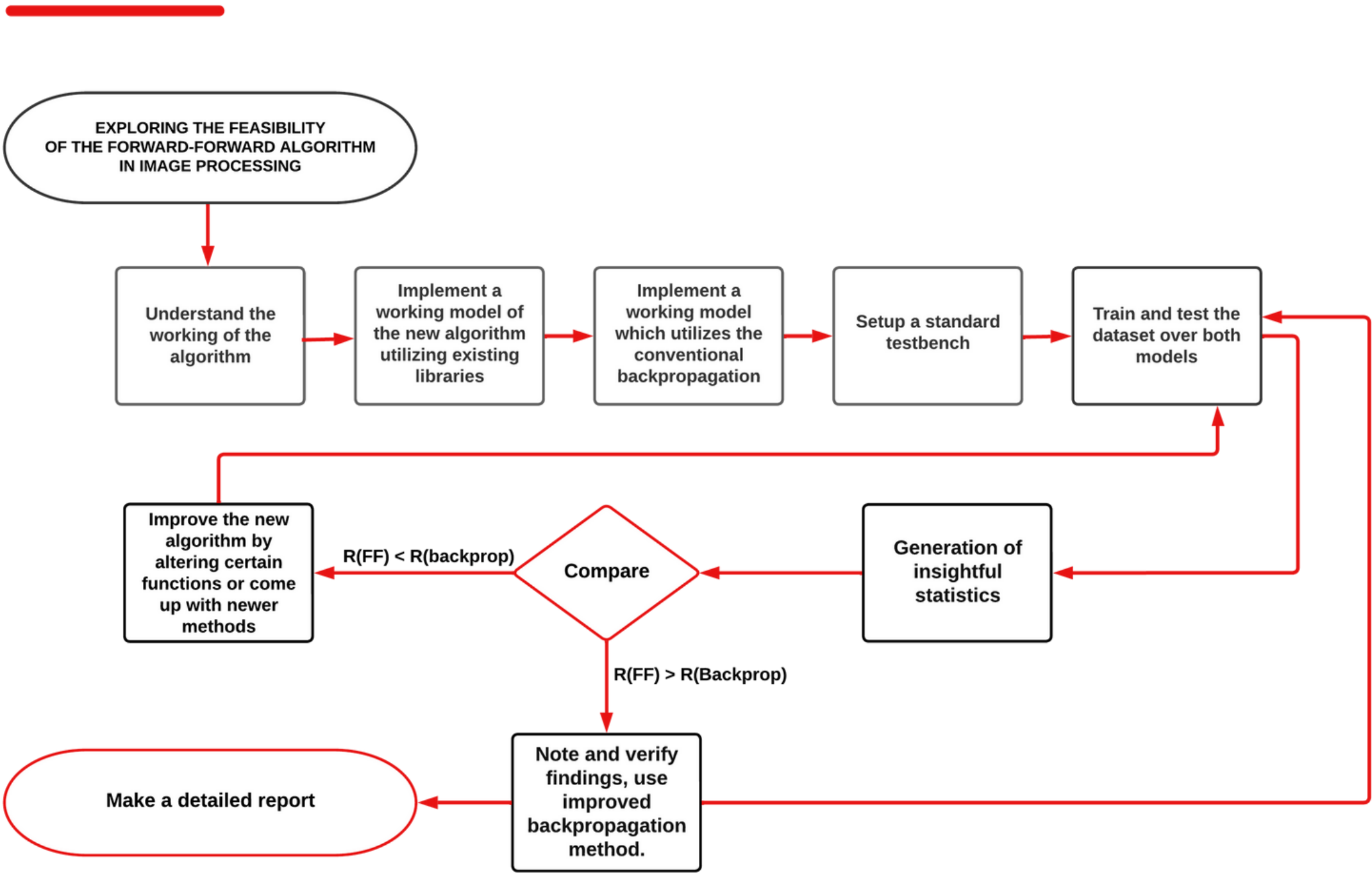
ABSTRACT & SCOPE

- **THIS PROJECT SEEKS TO CREATE AND EVALUATE THE FORWARD FORWARD ALGORITHM'S SUITABILITY FOR A VARIETY OF IMAGE PROCESSING TASK, INCLUDING IMAGE CLASSIFICATION AND OBJECT DETECTION.**
- **THE EFFECTIVENESS OF THIS NEW ALGORITHM WILL BE DETERMINED BY COMPARING ITS PERFORMANCE TO THAT OF CONVENTIONAL ALGORITHMS THAT EMPLOY BACKPROPAGATION AND BY EVALUATING A NUMBER OF METRICS, INCLUDING ACCURACY, SPEED, AND COMPUTATIONAL COMPLEXITY.**
- **THE OUTCOMES OF THIS PROJECT WILL GIVE INSIGHTS INTO THE POSSIBLE BENEFITS OF USING A FORWARD APPROACH IN IMAGE PROCESSING TASKS AND COULD LEAD TO THE DEVELOPMENT OF MORE EFFICIENT AND ACCURACY IMAGE PROCESSING ALGORITHMS.**

SUMMARY OF CAPSTONE PROJECT PHASE – 1

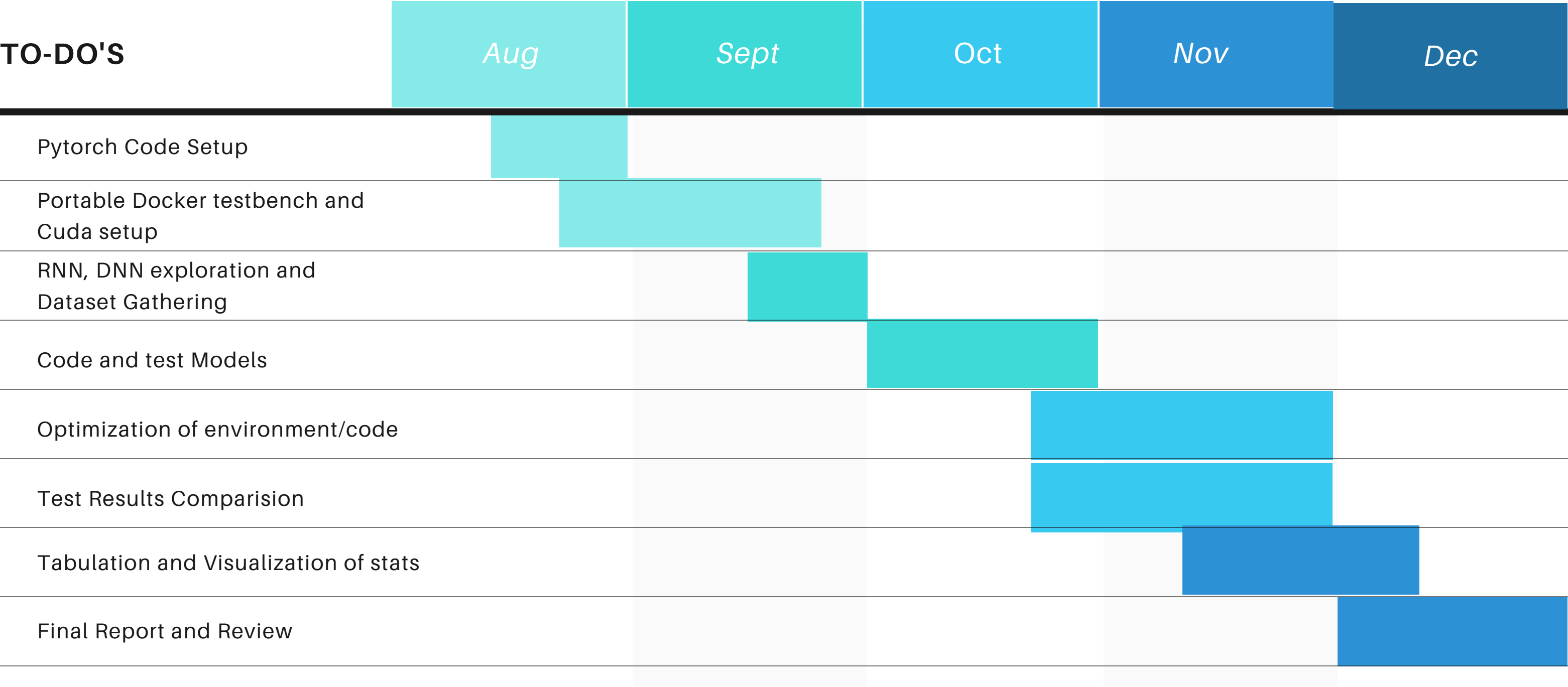
- **LITERATURE SURVEY OF INITIAL PAPERS**
- **ANALYSIS AND UNDERSTANDING OF THE ALGORITHM**
- **CNN IMPLEMENTATION USING TENSOR FLOW CODE**
- **SETUP OF DOCKER TESTBENCH**
- **INITIAL TEST OF CNN ON TESTBENCH**

DESIGN OF OVERALL ARCHITECTURE

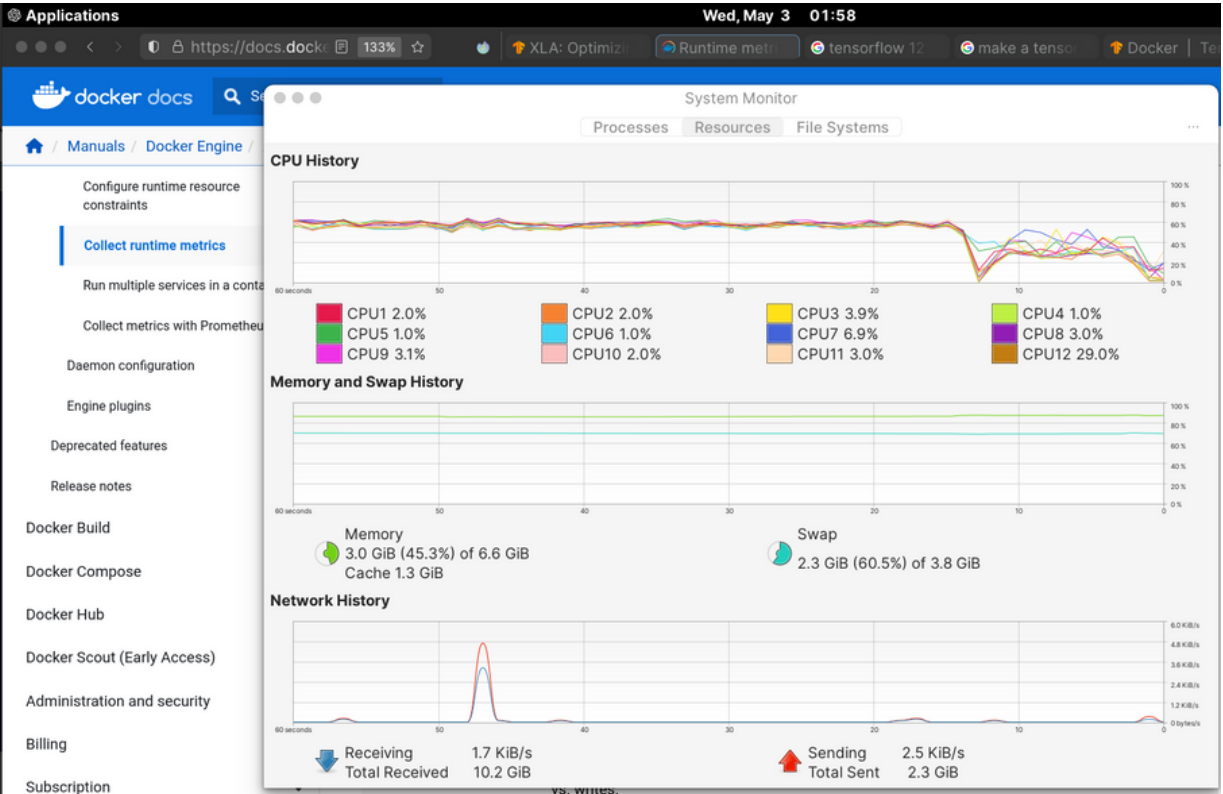
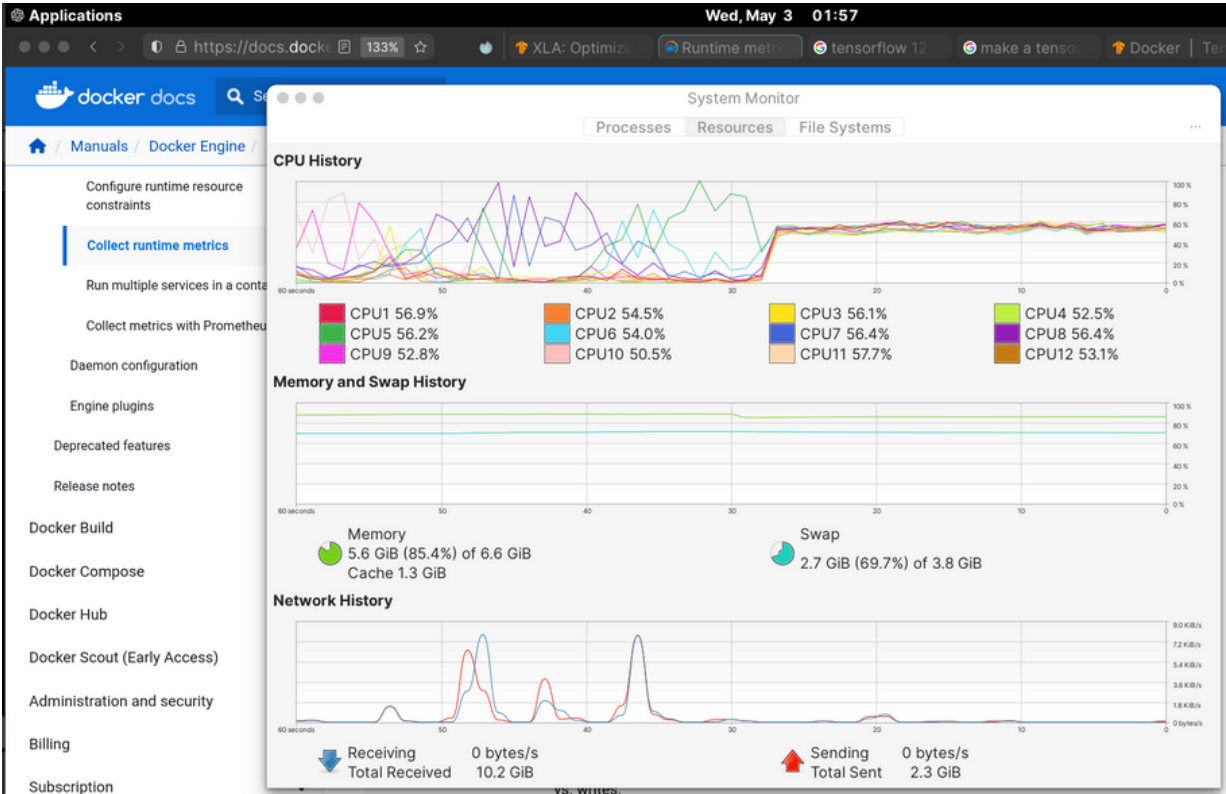


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R(FF) - Results of Forward Forward
R(Backprop) - Results of Backpropagation

GANTT CHART



DEMONSTRATION AND TESTING OF THE COMPLETED MODULES



REFERENCES

- <https://www.cs.toronto.edu/~hinton/FFA13.pdf>
- <https://medium.com/@monadsblog/forward-forward-algorithm-9a56307df602>
- <https://github.com/keras-team/keras-io/pull/1170>
- <https://keras.io/examples/vision/forwardforward/>
- <https://www.mathworks.com/matlabcentral/answers/86622-image-processing-with-backpropagation-algorithm>
- <https://arxiv.org/pdf/2301.01452.pdf>
- https://github.com/EscVM/EscVM_YT/blob/master/Notebooks/2%20-%20PT1.X%20DeepAI-Quickie/pt_1_forward_forward_alg.ipynb

THANK YOU