# Roofline Model

Hao Deng

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## 1 Introduction

In this assignment, we want to generate the roofline model for our machine.
Our machine has:

1. Intel Core i7-8700 3.70GHz
2. gcc (Ubuntu 11.4.0-1ubuntu1 22.04) 11.4.0
3. Ubuntu 22.04

We will perform the following five tasks:

1. A one-core roofline plot for your computer using the docker image of amath583/ert;
2. A bandwidth roofline plot for your computer using the docker image of amath583/bandwidth;
3. A roofline plot without advanced CPU instructions (that might not be supported on all platforms) for your computer using the docker image of amath583/bandwidth.noavx
4. A multiple-core roofline plot for your computer using the docker image of amath-583-ert.openmp
5. A multipe-core roofline plot on your Ubuntu OS using the roofline toolkit at `https://github.com/emilioj/cs-roofline-toolkit/`.

## 2 Result

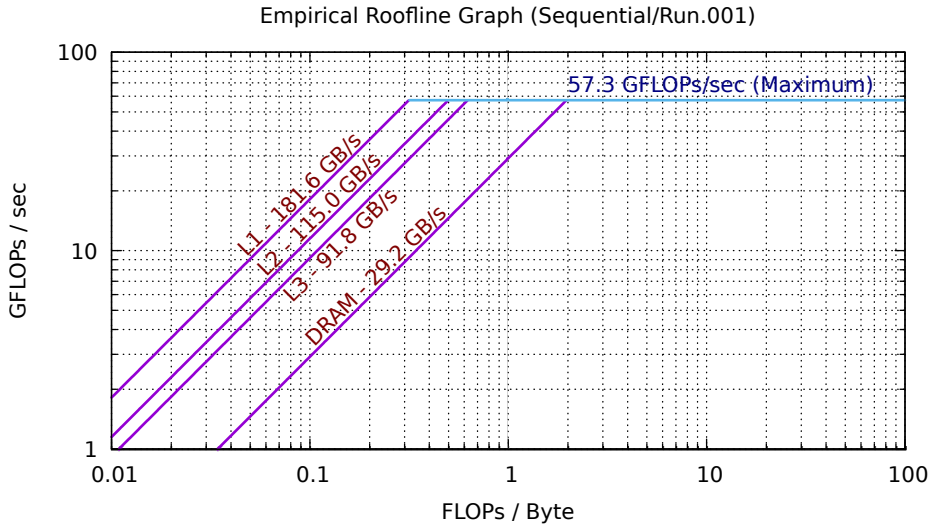


Figure 1: Docker ert

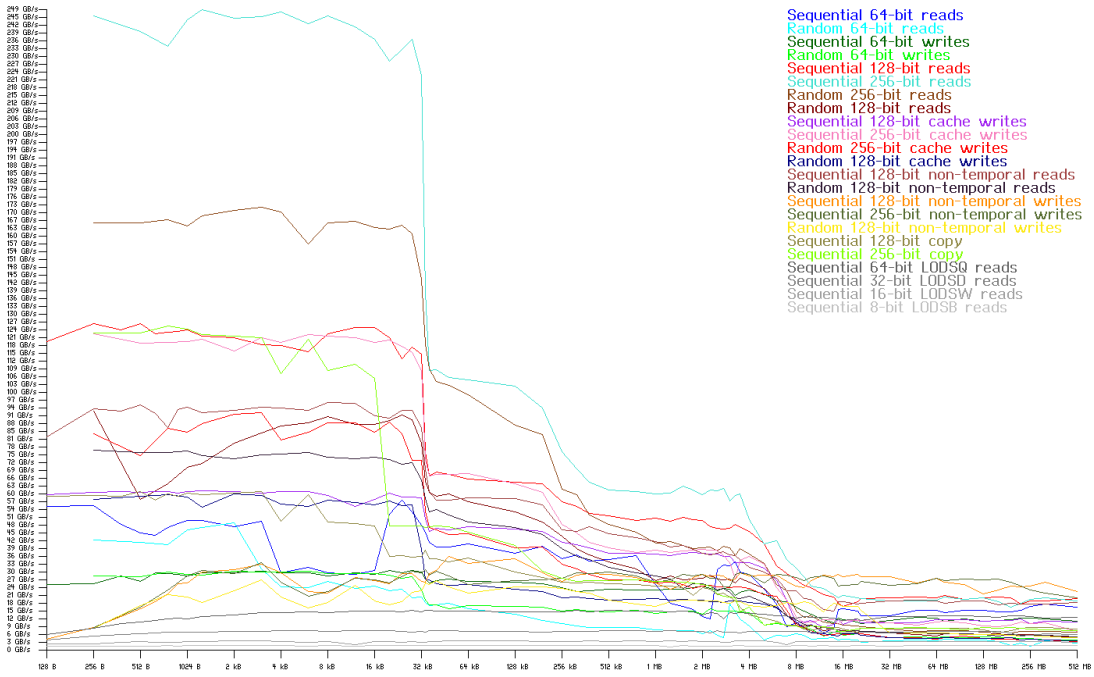


Figure 2: Docker bandwidth

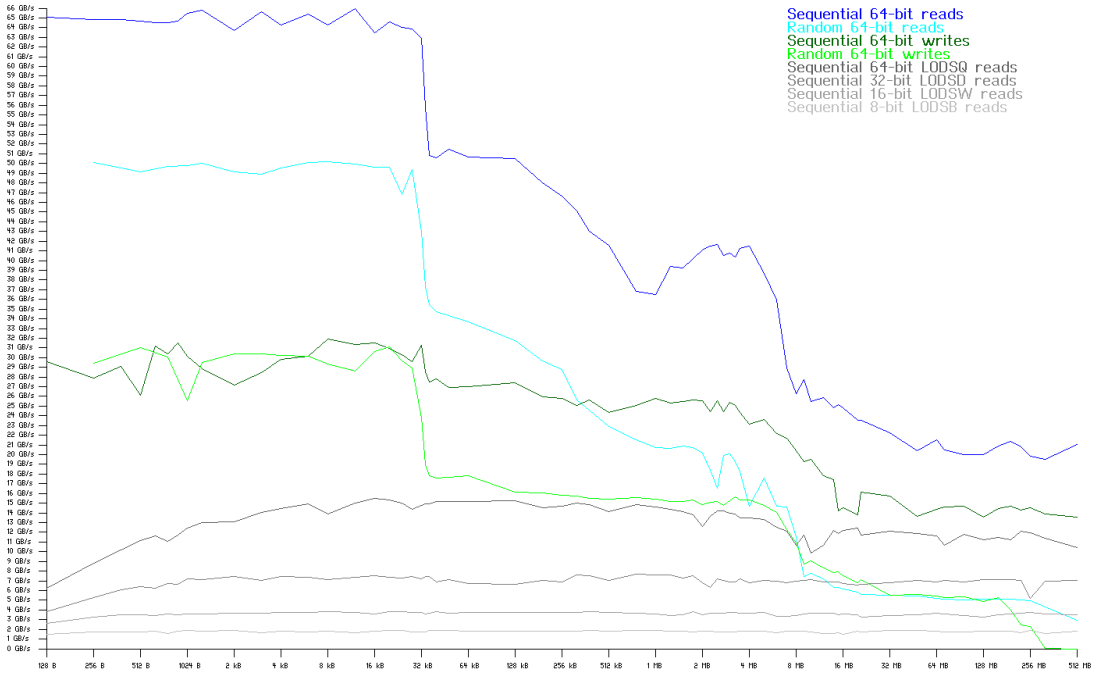


Figure 3: Docker bandwidth.noavx

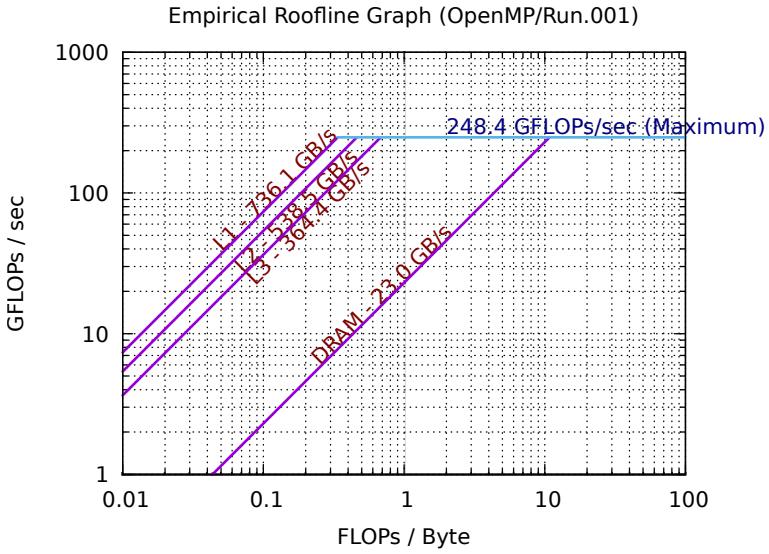


Figure 4: Docker ert.openmp

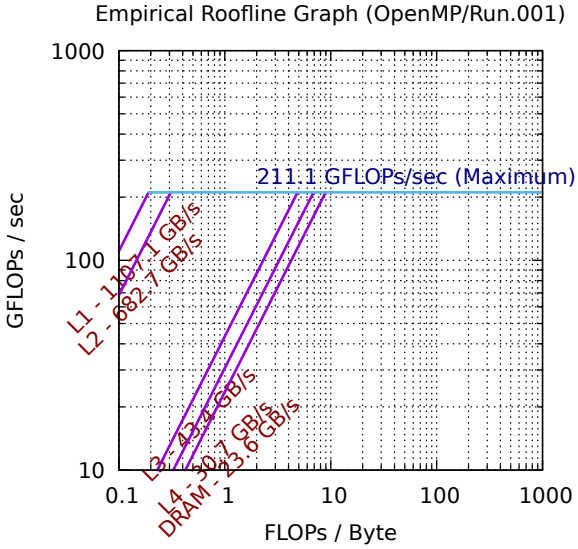


Figure 5: ERT on Local Machine

# 3 Conclusion

We can notice that the roofline model on our local machine shows better performance than than in docker containers. Therefore, docker does affect the performance of the machine.