

# Labwork 4: Threads

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## 1 Subject

- Copy labwork 3 code to labwork 4
- Improve labwork 4 code to use 2D blocks
- Use `time.time()` to measure speedup

## 2 Implementation

This report is using CUDA kernel provided by Google Colaboratory.

Attribute	Value
Number of CUDA Devices Found	1
Device ID	0
Name	Tesla T4
Compute Capability	7.5
PCI Device ID	4
PCI Bus ID	0
UUID	GPU-af936f72-170a-716a-326e-6053e93d8f54
Watchdog	Disabled
FP32/FP64 Performance Ratio	32
Multiprocessor Count	40
Approximate Core Count	2560
Total Memory Size	14.75 GB
Environment	Google Colab

Table 1: CUDA Device Information

## 3 Results

The implementation process utilizes the sample image shown in Figure 1.

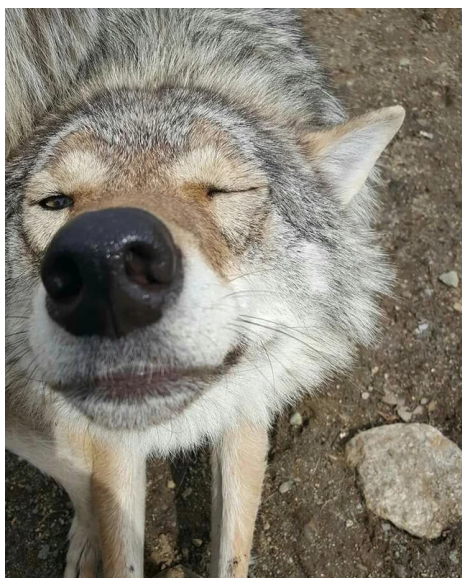


Figure 1: Sample image (Increased resolution)

The table below shows the information of the image to be processed:

	<b>Lab 3</b>	<b>Lab 4</b>
<b>Pixel Count</b>	512,000	4,995,501

Table 2: Image Shape

The table below shows the results of CPU and GPU processing:

<b>CPU (seconds)</b>	<b>GPU (seconds)</b>
0.148201	0.005883

Table 3: Processing Time

## 4 Conclusion

The GPU speeds up processing time by 25.19 times compared to the CPU.