

Your Title Goes Here

Assignment #X, CSC 746, Fall 2025

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Abstract—Please take a few moments and try to compose an abstract for your homework writeup. It should contain these ideas: what was the problem being studied, what was the approach (what did you implement), what are the results. The abstract should describe the basic message of the paper, including: the problem, why your solution should be of interest, some notion that your solution is effective, and a teaser about how it has been evaluated. Cover all of this using between 75 and 150 words. Thus, the abstract is the hardest part to write. Sometimes I try to write it first, but the final version is usually composed of items drawn from the introduction, and then condensed, as the last step of writing the paper.

I. INTRODUCTION

For homework writeups, the Introduction section should state the general thrust of the assignment.

What is the problem being studied? Explain in 2-3 sentences.

What is the approach for studying the problem? Hint: the approach consists of the program(s) you are writing, so say in 2-3 sentences something about those programs. If you like, it is ok to use a forward reference, and say something like "we present the implementation in §III."

What are the main results? Say something about the results in 2-3 sentences: what is the nature of your experiment that tests your implementation, and say something about the insights gained.

II. RELATED WORK

For most of your homework writeups, you are not expected to include a literature review of previous work. If this is not the case, you will be given explicit instructions to the contrary in the homework assignment writeup on iLearn.

III. IMPLEMENTATION

Put an introductory paragraph here that gives the reader an overview of what's coming. If there are multiple subsections, say in a few words or a sentence something about each subsection.

A. Part 1

State the objective for the implementation (2-3 sentences).

Describe the implementation (2-3 sentences, or more if needed). Feel free to use coding examples as needed, such as that shown in Listing 1.

```
1 float smoothPixel(Si, Sj, S, R, weights) {  
2     // compute the weight sum of pixels nearby  
3     // this code doesn't handle edge  
4     // conditions  
5     // and assumes sum of weights[i,j] = 1.0  
6     float sum = 0.0;  
7     for (int j=0; j<R; j++)  
8         for (int i=0; i<R; i++)  
9             sum += weights[i,j]*S[Si+i,Sj+j]  
return sum; }
```

Listing 1. Stencil computation in 2D: performs sum of product of nearby pixels with weights.

B. Part 2

Repeat the concepts/writing motif from above as needed for your implementations.

IV. EVALUATION

Provide an introductory paragraph that summarizes what's in this section: a list of runs/experiments intended to test your implementation and ideas. Describe each of these experiments in a few words/a sentence.

Problem Size (N)	Ideal runtime (sec)	Actual runtime (sec)
1	1	1
2	0.5	0.75
4	0.25	0.56
8	0.12	0.42
16	0.06	0.31

TABLE I

COMPARISON OF ACTUAL AND IDEAL RUNTIMES FOR DIFFERENT PROBLEM SIZES. THE ACTUAL RUNTIME DOES NOT EQUAL IDEAL RUNTIME IN THIS CONFIGURATION.

A. Computational platform and Software Environment

What machine did you run your tests on? What was the processor, its clock rate (GHz), size of L1/L2/L3 cache, how much memory (DRAM), what OS?

What compiler did you use, what compilation flags?

B. Methodology

Describe the procedures you use to test your system.

Performance metrics: describe exactly what metrics you employ to measure performance. It might be elapsed time from instrumentation code you added around the main computational code. Later in the term, it may be something else.

Experimental design: did you run tests over a set of prescribed problem sizes? If so, what were they?

C. Experiment 1

Describe the experiment in a few sentences: what question are you trying to answer, what problem sizes/etc did you use (it's ok to make reference back to Sec. IV-B so you don't have to repeat a lot of details).

Present the results of your experiment using either tabular forms of information, such as in Table I, or using charts and graphs as in Fig. 1.

D. Experiment 2

Repeat the writing motif as in Experiment 1 as needed.

E. Findings and Discussion

In this section, please answer the questions posed in the homework assignment writeup on iLearn.

Also, optionally include any additional insights you gained while doing these performance experiments.

If this were an actual tech paper, here is where you would summarize the main findings and observations from the experiments: do the experiment results support your hypothesis? Sometimes the answer is a clear Y. Sometimes, the answer is Y for some circumstances, but not all, and it is important to spell this out.

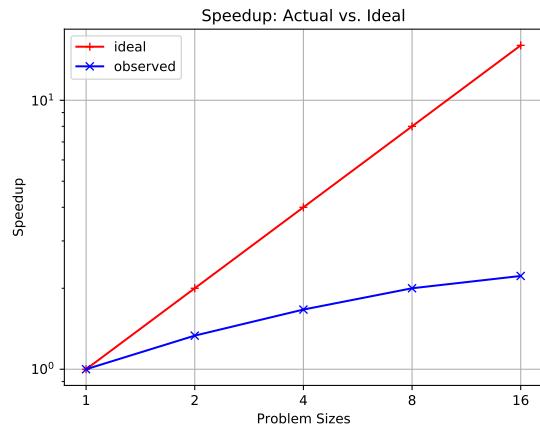


Fig. 1. Comparison of actual vs. ideal speedup with increasing problem sizes. In this case, we see that the observed speedup is quite different than the ideal speedup. Try changing the vertical axis to log-scaling in the Python script that generates the chart. This figure was produced by the sample `plot_speedup.py` file.

Sometimes, the experiments turn up unexpected negative results, and it is also important to point out those, as well. Science happens due to both successes and failures, and it is important to document failed experiments so that we can all learn from them.

ACKNOWLEDGEMENT

For homework writeups, you may comment out the Acknowledgements section. The authors wish to thank A, B, C. This work was supported in part by a grant from XYZ. *Comment:* you don't need this section in homework assignments, but you will need it when you create a final, camera-ready version of a technical paper for publication.