

Colorado State University

CS 475 Projects

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Project Goals

- Apply the methods you learned so far to “something substantial.”
- Use the principles and extrapolate them to scale
- Tackle something that someone cares about enough to seek an improved performance.
- Have fun (the most important goal)

Grading Rubric (overall 15%)

- Initial study (3%)
- The work itself (9%)
 - Methods Used
 - Effectiveness
 - Iterations
- Poster Presentation (3%)

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Initial Study (100 pts)

- Form a team (10)
 - Who you are
- Pick an application and platform (10)
 - What is the problem and why is it important
 - Justify the target
- Study the code (30)
- Measure baseline performance (30)
- Set yourself a target, with justification (10)
- Write this up (10)
 - Tell a story

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Work Itself (100 pts)

- Loop through the iterative process
 - Try to get low hanging fruit first
- Keep a log
 - Things that you try initially may not work, but may become applicable after other things are done
- Keep track of lessons learnt
- Look back (how much the performance improved)
- Look ahead (how far to the machine peak)

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Poster Presentation (100 pts)

- Thursday Dec 12
- CSB 3rd floor open area
- Set up posters by 10:00 AM.
- Be present during class time (and any other time you are free)
- Mingle interact
- Take down at 3:30

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Sample projects

- DoE (Department of Energy) Exascale project(s)
- piRNA and its ilk (all source code is available)
 - piRNA 96 * $(N * M)^6$ double precision floating pt
 - BMax 2 * $(N * M)^6$ and only does max-plus on ints (maybe even shorts)
 - BPart 10 * * $(N * M)^6$
- Back Propagation Learning
 - Challenge: get as close to TMP as possible
- Non-negative matrix factorization
- CUDA MMScan++