Goals for Future Multiprocessors

- Performance through Parallelism
- Make parallel programming easier
- Power efficiency
- Specialized cores to improve performance for specific application
- Single-thread performance

Examples for Research Multiprocessors

TRIPS

- TRIPS online slides

RAW

- RAW online slides

Wavescalar

- Superscalar limitations
  - Complexity
  - Ignores dataflow locality (Wavescalar paper figure 1)
  - Prediction of the dependence of instructions through a dynamic trace of an application
  - Serial computing inherited from von Neumann model

- Wavescalar
  - Execute each instruction at most once
  - Instructions partially ordered (no loops)
  - Wave number: denotes different dynamic instances of the same variables
  - Wave cache: collection of instruction words, current working set of instructions with dedicated functional units (Wavescalar paper figure 3)

Project and Final Exam

- Project presentations due Friday before 7 PM
  - What you need to submit: check course webpage
- Everybody needs to present
  - Presentation is part of your grade
  - I’ll send an email with presentation schedule
- Final project reports due next Tuesday by midnight
- Final Exam: Wednesday, in class
  - Open book, notes, and calculator
  - Should be ~75 minutes