Examples for Research Multiprocessors
Goals for Future Multiprocessors

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

- TRIPS online slides
RAW

- RAW online slides
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 Thursday before class
  - 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 Exam: Friday at 7 PM
  - Open book, notes, and calculator
  - Should be ~75 minutes
  - Mainly covers topics starting from memory consistency models