Who are you?

- 80% New grads, 20% returning
- 4 graphics
- 4 theory
- 3 languages
- 3 Systems/architecture
- 3 AI
- 2 EE, 10 or so CS
- 0 from washington
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A little about me…

- I am not a processor architect
- I am wondering lately if I am an architect
- I used to worry about the memory system
- Now I worry about:
  - models of computation
  - simulation
  - statistics
  - quantum computation
  - limits of computation
  - processors?

What do you want from this class?

Asynchronous computing
Optical computing
Information about current state of the art
Special purpose domains:
      Graphics
      Embedded computing
        Compression

What is computer architecture?

- Organization of the process of data manipulation
- Optimization of the software expression and hardware implementation
  - Both representation and model

What is not CA?

- Digital design
- Algorithm design
- Graphics and rendering
- Signal processing
- Databases
- Compilers
- AI
- Biology
  - Architecture is a bit of all of this

What are the major innovations/principles in computer architecture?

- Turings work (pre-dates architecture)
- Von-Neumann architecture
- pipelining
- Cache hiearchy
- The IC
- RISC/Vector/VLIW (EPIC if your in Oregon)
- Multiprocessing (MPP+Vector, etc)
- SMT
- Distributed computing
- Virtual memory I/O
- PIM
- Branch prediction

What do computer architects do?

How do CA's do their work?

- We write simulators
- Worry about flow diagrams
- Once in awhile build a prototype
- Benchmark applications
- Prove stuff now and then
- Argue about design (CISC vs. RISC)