

Lecture 4

Simulation

Joel Emer and Daniel Sanchez
6.888 Parallel and Heterogeneous Computer
Architecture
Spring 2013



Massachusetts Institute of Technology



Scientific Research

- Take hypothesis about environment
- Design experiment
- Run experiment and quantify
- Interpret results
- If necessary, create new hypothesis

Architecture Research

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Architecture Research

- Take hypothesis about environment
- Design Experiment - pick baseline design and workload
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Architecture Research

- Take hypothesis about environment
- Design Experiment - pick baseline design and workload
- Run experiment and quantify – run model or measure hardware
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- If necessary, propose new design

Simulator wars



Photos from wikipedia

Simulation Tradeoffs

Modeling Approaches

- Hardware measurement

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- Prototyping

 - Hardware

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- Simulation

 - Software

 - Hardware

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- Emulation

 - Software

 - Hardware

What are the basic strengths and weaknesses of each approach?

Techniques

- Parallelization
- Modularization
- Split functional/timing
 - ▣ Timing-directed vs Functional-directed
- Split behavior/timing
- Hardware-only
 - ▣ Time-division multiplexing
 - ▣ “Transplanting”