CSE775: Computer Architecture

Overview
What is Computer Architecture?

- Functional operation of the individual HW units within a computer system, and the flow of information and control among them.

Diagram:
- Computer Architecture
  - Hardware Organization
  - Measurement & Evaluation
  - Programming Language Interface
  - Interface Design (ISA)
  - Applications
  - Operating System (OS)
  - Parallelism
  - Technology
Let’s Compare ……

Building Architect                     Computer Architect
Computer Architecture

• Why should we study Computer Architecture?

• Architecture Course Sequence in CSE
  CSE 675 -> CSE 775 -> CSE 875

• Architecture/High Performance Computing Integrated Sequence
  CSE 775 -> CSE 721 -> CSE 875
  CSE 621 Different 788s
Course Objectives

• To evaluate the issues involved in choosing and designing instruction set
• To learn concepts behind pipelining and advanced pipelining techniques
• To understand issues related to multithreading, instruction-level parallelism and speculation
• To understand the “hitting the memory wall” problem and the current state-of-art in memory sub-system (including cache) design
• To get an overview of interconnection network, parallel and multiprocessor systems
• To understand the qualitative and quantitative tradeoffs in the design of modern computer systems