



THE EVOLUTION AND ARCHITECTURE OF MODERN COMPUTERS

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CS4414/5416 Lecture 2

IDEA MAP FOR TODAY

Goal: Learn just a little about NUMA architectures.

We are not trying to be an architecture course. But we do need to be able to visualize what we are “asking the hardware to do”

Computers are multicore NUMA machines capable of many forms of parallelism. They are extremely complex and sophisticated.

Individual CPUs don't make this NUMA dimension obvious. The whole idea is that if you don't want to know, you can ignore the presence of parallelism

Compiled languages are translated to machine language. Understanding this mapping will allow us to make far more effective use of the machine.

... MAKING MODERN PERFORMANCE-FOCUSED PROGRAMMING COMPLICATED!

Prior to 2006, a good program

- Used the best algorithm: computational complexity, elegance
- Implemented it in a language like C++ that offers efficiency
- Ran on one machine

