

CS551/ECE541 - Advanced Computer Architecture

List of possible projects

- Project/Programming Oriented Projects
 - Develop a pipelined RISC Simulator
 - Develop a pipelined and bypassed Simulator
 - Simulate cache performance for a set of codes
 - Simulate/compare various cache coherence protocols
 - Develop a superscalar RISC simulator using Tomasulo's algorithm
 - Develop a superscalar RISC simulator using Scoreboarding
 - Develop a superscalar RISC simulator using simultaneous multithreading
- Research Oriented Projects - Possible topics
 - Chip Multiprocessors
 - Simultaneous multithreading
 - Branch prediction using trace caches
 - VLIW Architectures
 - Things to do with a billion transistors
 - DSP Architectures
 - Survey of cache configurations
 - Dataflow architectures
 - Fine-grained execution architectures
 - Cache coherency in multiprocessors
 - Dynamic compilation (Transmeta)
 - Multimedia Instruction Sets
 - AMD vs Intel Implementation
 - ARM vs x86 Architecture
 - Alternative architectures (vector, GPU)
 - Reconfigurable Computing
 - Formal methods verification of computer architectures
 - GPU Architectures
 - "Game Box" architectures
 - Hypertransport(AMD)/QPI(Intel) interconnect buses