CS610 Parallel Processing (Spring 2024)

Course:	CS610 Parallel Processing
Instructor:	Jongse Park E3-1 4403 Phone: 350-3580 jspark@casys.kaist.ac.kr
Teaching Assistants	TBA
Class Meetings	TTh 13:00-14:15PM
Textbook	Research papers in computer architectures
Course Objectives	Computer architecture is a fast-evolving area with interesting new techniques added in every generation of processors. Recently, the advent of Artificial Intelligence is rapidly changing the landscape of IT industries, which necessitates the re-architecting of computing platforms. Especially, industries are moving towards integrating conventional general-purpose processors such as CPU and GPU with emerging AI accelerators, exemplified by Google TPU, Microsoft MAIA, and Meta MTIA. This course will focus on the recent advances in the field of AI acceleration, covering various topics.
Prerequisites	You need substantial understanding of graduate-level computer architecture and undergraduate-level operating systems. Additionally, you will need sufficient background knowledge on artificial intelligence and machine learning to digest the AI accelerator papers. IMPORTANT: This course will be a serious research-oriented one dedicated to the topics published in the top computer architecture conferences such as ISCA MICRO, ASPLOS, and HPCA. You will be asked to understand those latest topics.
Projects	Student-directed term project that involves hardware development using hardware description languages (HDL) such as Verilog and/or open-source hardware simulators such as zsim, gpgpu-sim, and DRAMsim.
Presentations	A student will be required to present one or more published research papers during the semester.
Evaluation	Project: 50% Presentation: 30% Class Participation: 10% Attendance: 10%