Course Announcement

EE/CSCI 451: PARALLEL AND DISTRIBUTED COMPUTATION
TTh 200-320, LAB/DISCUSSION F 430-550
SPRING 2023

The course will focus on broad principles of parallel and distributed computation. The Lab associated with the course will illustrate the principles through parallel programming examples.

INSTRUCTOR: VIKTOR K. PRASANNA

Prerequisite: (EE 355x or CSCI 201L) or consent of the instructor.
Course Grade: based on homeworks, class participation, parallel programming assignments, midterm(s), final and project.

Course Outline:
1. Introduction (1): Architectural advances, technology perspectives, motivating examples, challenges.
6. Basic Communication Primitives (4): 1. Broadcast and all to all, communication costs on various topologies. 2. Personalized communication. 3. Reduce, prefix sum and scatter and gather. 4. Graph embeddings.
9. Data Parallel Programming Abstraction of GPUs (2): 1. GPU architecture, SIMT execution model, CUDA programming model. 2. Illustrative examples and application mapping, optimizations, OpenCL.