COMP 790-033  Fall 2022
Wed 2.45 – 5.15 PM in SN 011*

Topics in Parallel Computing
(3 credit hours)

Instructor: Jan Prins

This graduate seminar in Computer Science will examine programming languages and models for parallel computation.  We will study a variety of current parallel programming languages and consider advantages and shortcomings for shared-memory and distributed-memory processors, and examine their performance scalability using current hardware.

We will also explore emerging quantum computing models that may potentially be the source of greatly increased performance for a restricted class of parallel computation.

Participants in this seminar will be expected to make a presentation of a programming project with scalable performance using one of the parallel computing models.

Topics

- PRAM: Parallel Random Access Machines
- Shared Memory Machines
- Cache-coherent Non-uniform memory machines
- Bulk-Synchronous Processors
- Message Passing Processors
- Collective Communication
- Partitioned Global Address Spaces
- Quantum Computing

Instructor information

Office FB 334, office hours TBA  email:  prins@cs.unc.edu

Requisites

Graduate standing.

Goals/student learning outcomes

Determining parallel architectures, parallel algorithms, and parallel programming languages that offer best performance for a given problem.

Course Materials

Available online on course website:  http://www.cs.unc.edu/~prins/Classes/790-033/

Grading

Based on class participation and course project.


* classroom may change