CS 66105/76105  PARALLEL AND DISTRIBUTED ALGORITHMS  3 Credit Hours

Instructor’s Name: Qiang Guan


Course Content:
(Cross-listed with CS 76105) Introduces and evaluates important models of parallel (synchronous and asynchronous) and distributed computation, using basic searching, sorting, graph, matrix, numerical computing and computational geometry algorithms.

Prerequisites or co-requisites: Graduate standing
Required: BS-CS
Elective: BS-Other

Topic to be Covered: Total 45 hours
1. System architecture for parallel and distributed computing, 6 hours.
2. Parallel programming models, 9 hours.
3. Message Passing Interface, 6 hours.
4. GPU programming, 6 hours.
5. Parallel computing algorithm design and implementation, 12 hours.
6. Performance evaluation, 6 hours.

Learning Outcomes:
1. Understand technologies, system architectures in parallel and distributed computing system.
2. Accomplish the understanding of principals parallel programming models.
3. Grasp the programming skills on MPI and GPU.
4. Understand the current cutting-edge design and implementation.
5. Understand how to evaluate the performance of parallel algorithm and be able to optimize the performance.

Learning Outcomes Assessment:
1. Four-five moderate length programming assignments.
2. Two-three written assignments.
3. Midterm and Final exams.
4. Scientific research paper reading and presentation.
5. Term Project.