

Syllabus and Class Information
COM S / CprE 527
Concurrent Systems
Iowa State University

Lecture: Mon Wed Fri, 9:55 AM - 10:45 AM Central Time (Spring 2023)

In-class: 1126 Sweeney

Canvas: <https://canvas.iastate.edu/courses/98815>

Instructor

Ali Jannesari

<https://www.cs.iastate.edu/swapp/>

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Office hours: Tue 3-4 pm and by arrangements

Backup Instructor: TBA

TA

Sixing Yu

Email: yusx@iastate.edu

TA office hours: Thursday 3:30-5:30pm Atanasoff B04

Course description

Fundamentals and advances in concurrent systems in the context of GPUs, TPUs, multicore and HPC systems with specific focus on parallel programming models. Discussion of high-performance computing, GPGPU, scaling (ML/DL algorithms) deep neural network training, high-performance deep learning, engineering parallel software and parallel design patterns.

Prerequisites

Working knowledge in software engineering and programming is necessary.

COM S 352 or Instructor Permission.

Homework and assignments

There will be homework assignments, assigned roughly weekly/biweekly. Selected solutions for code walks, explanations, and demonstrations during the classes.

Paper presentation

There will be a paper presentation on selected topics by each student in the class that will be based on online articles and recently published papers. A list of important and/or trending papers and topics will be provided. Presentation slides and max. 2 pages summary of the paper are required.

Project

The project could be done individually or by a team of max. two students. Project proposals will be due a week after midterm (max. 1 page, Week 6-7). Final reports will be due by the beginning of the final exam week. Students have to provide a final report (max. 5 pages) for each project. Also, they have to present a 30-minute presentation/demonstration at the end of the semester for the class. Attendance to project presentations is required. Students are required to propose creative and novel project ideas and should justify the novelty of their project and try to convince the instructor about the proposed project. Potential project ideas include but not limited to the applications of in-demand areas of software analytics, parallel computing and HPC, deep learning, and HPC embedded systems.

Grading policy

Homework: 25%; Paper presentation and Summary: 25%; Project: 50%.

Late policy

Without the consent of the instructor, late submissions of homework assignments, project proposal, reports, and presentations are not accepted. Students are required to get written permission in advance for a possible extension in case of an emergency or a firm conference deadline.

COVID-19 health and safety requirements

Face masks encouraged

Because of the continuing COVID-19 pandemic, all students are encouraged—but not required—to wear face masks, consistent with current recommendations from the Centers for Disease Control and Prevention. Further information on the proper use of face masks is available at: <https://www.cdc.gov/coronavirus/2019-ncov/your-health/effective-masks.html>

Vaccinations encouraged

All students are encouraged to receive a vaccination against COVID-19. Multiple locations are available on campus for free, convenient vaccination. Further information is available at: <https://web.iastate.edu/safety/updates/covid19/vaccinations>
Vaccinations may also be obtained from health care providers and pharmacies.

Physical distancing encouraged for unvaccinated individuals

Classrooms and other campus spaces are operating at normal capacities, and physical distancing by faculty, staff, students, and visitors to campus is not required. However, unvaccinated individuals are encouraged to continue to physically distance themselves from others when possible.

Accessibility Statement

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. Students requesting accommodations for a documented disability are required to work directly with staff in Student Accessibility Services (SAS) to establish eligibility and learn about related processes before accommodations will be identified. After eligibility is established, SAS staff will create and issue a Notification Letter for each course listing approved reasonable

accommodations. This document will be made available to the student and instructor either electronically or in hard-copy every semester. Students and instructors are encouraged to review contents of the Notification Letters as early in the semester as possible to identify a specific, timely plan to deliver/receive the indicated accommodations. Reasonable accommodations are not retroactive in nature and are not intended to be an unfair advantage. Additional information or assistance is available online at www.sas.dso.iastate.edu, by contacting SAS staff by email at accessibility@iastate.edu, or by calling 515-294-7220. Student Accessibility Services is a unit in the Dean of Students Office located at 1076 Student Services Building.

Preparation (Dead) Week

This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook. There will normally be homework due on the last day of classes. Project presentations could take place during the dead week.

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Contact Information

If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.