ECE5990 Datacenter Computing

Course Information

https://sites.google.com/site/topicsondatacentercomputing

Course description: Warehouse-scale datacenters host a wide range of online services, including cloud computing, social networks, web search, video streaming, and software-as-a-service. In this course, we will study the hardware, systems software, and distributed systems technology in modern datacenters. We will also explore cross-cutting issues such as total cost of ownership, service level objectives, availability and reliability. The course is a combination of lectures and paper reading. Students will read up to two papers per topic and submit brief summaries. At the classroom, we will start with a student presentation of the papers followed by a discussion.

ECE5990 is appropriate for graduate and advanced undergraduate students who want to learn more about cloud computing and datacenter systems. It is also appropriate to ECE and CS students who want to gain some experience with a semester-long research project on a cutting edge systems topic.

Lectures: Monday & Wednesday, 2:55pm--4:10pm, Hollister Hall, Room 362

Note on Lecture Attendance: You are strongly encouraged to come to the lectures. The course involves a lot of discussion on the latest research contributions in datacenter systems and class participation in an important part of understanding the course material. Moreover, the lecture notes and the textbook are not guaranteed to capture 100% of every topic discussed during lecture.

ECE5990 Staff

Instructors: Christina Delimitrou
delimitrou@cornell.edu

Class Webpage: https://sites.google.com/site/topicsondatacentercomputing

Visit the web page regularly to access all the handouts, papers, and announcements

Class Mailing List: Registered students will be automatically added to the mailing list. The list will be used only for announcements by the staff. Announcements will also be available on the webpage.

Online Forum: We will use Piazza as the Online Forum for Q&A regarding the lectures and as a way for students to form their project teams. When posting a question, make sure you use an appropriate subject. Before posting a question, check to see if this question has already been answered. In addition, check the FAQ section of the webpage description for lectures and project assignments. You are welcome to discuss questions with your classmates using the forum.

For questions that are not appropriate for posting to the forum, you can email the instructor directly. Write "ece5990" at the beginning of the email subject.

Handouts: All the handouts will be available in electronic form on the class webpage. The lecture notes will be typically posted on the webpage a couple of hours before the lecture. If you find mistakes on the handouts, please let us know. We will post corrected handouts on the class webpage as soon as possible.

Prerequisites: There is no formal prerequisite for ECE 5990. Nevertheless, we expect students to have basic understanding of systems and architecture concepts (through a course like ECE4750, or equivalent) and be comfortable with C++ and/or Python programming.

**Additional Reading:** All research publications will be made available on the course website ahead of time.

**Exam:** There will be one midterm in the beginning of the second half of the semester. The exam will cover the lectures and research publications covered until that point in the class.

**Project:** The main evaluation criterion in ECE6960 is a semester--long research project you will work on in groups of 2--3. We will post suggestions for projects on the course website in the first week of class. Students are welcome to choose from the recommended projects, but can also suggest projects of their own, especially if your research is related to the field of cloud computing.

**Grading (tentative):**

- Project 50%
- Exam 25%
- Paper presentation, summaries, class participation 25%