

Syllabus for EECS 283 Advanced Topics in Intelligent Systems

Spring 2020

Instructor: Shijia Pan

Course Description Intelligent systems have become an important part of our everyday life. Smart devices and systems become more and more pervasive. The development of intelligent systems rely on multidisciplinary research, which include and not limited to artificial intelligence, machine learning, networking, robotics, security, and signal processing. This class will review the state-of-the-art in intelligent systems and help students prepare for research in intelligent systems. Topics will vary from semester to semester.

**Textbooks and Other
Required Materials**

**Course Objectives/
Student Learning
Outcomes** A significant part of this class is an individual or a group project, which includes project proposals, presentations, and a project report. The choice of a project topic (with instructor approval) is up to students; however, the project must exhibit the interplay of at least two of the main themes (inference, networking, and control).

Prerequisites by Topic linear algebra, probability, embedded systems (optional),

Topics

- Introduction to cyber-physical systems (CPS)
- Communication and networks
- Sensors and sensing modalities
- Synchronization and calibration
- Localization and target tracking
- Mobile sensor networks
- Heterogeneous sensing systems
- Signal mixture in real-world CPS
- Data quality of real-world CPS
- CPS security through sensing
- Transfer learning for CPS

Assignment and Grading

- 10% attendance
- 10% class interaction
- 30% homework
- 50% final project