EECS 498: Introduction to Algorithmic Robotics
Fall 2020 Syllabus

Instructor:

Dmitry Berenson
Office: 3217 EECS
Email: berenson [at] eecs.umich.edu

Time: Mon, Weds 3:00pm - 4:30pm

Location: Online

Course Website: http://web.eecs.umich.edu/~dmitryb/courses/fall2020iar/index.html

The instructor reserves the right to modify the course outline and policies mentioned in this syllabus at any time during the term.

Overview: An introduction to the algorithms that form the foundation of robot planning, state estimation, and control. Topics include optimization, motion planning, representations of uncertainty, Kalman and particle filters, and point cloud processing. Assignments focus on programming a robot to perform tasks in simulation.

Prerequisites: Required: EECS 280, Recommended: EECS 281 and MATH 214
No credit if students have taken EECS 598: Motion Planning.

Course Layout: This course will consist of lectures, reading, and implementing and presenting a final project employing the ideas covered in the class. Most reading will be from a textbook, though other handouts may be used. Student will complete quizzes, homeworks, and a final project report.

Lectures: Students are expected to attend all classes. It is essential that you carefully review any required reading before each class and be prepared to share your perspective. Class participation is essential.

Homework: Homework will be assigned throughout the semester. All homework will have a due date and no late homework will be accepted. Homework must be typed on single-sided, letter-size paper. **All homeworks must be done individually**.

Course Schedule: The course schedule is available on the course website.

Grading:

Homeworks	50%
Quizzes (drop lowest)	15%
Final Project	35%
In-Class/Piazza Participation	up to 3%

Academic Integrity: All work submitted for credit must be your own. Plagiarism is cheating and will be dealt with accordingly. Review the college of Engineering's Honor Code here: http://www.engin.umich.edu/college/academics/bulletin/rules

Student Disability Services: If you need course adaptations or accommodations because of a disability, or if you have medical information to share with the instructor, please make an appointment with your instructor within the first week of classes.

References:

- Steven M. LaValle, *Planning Algorithms*, Cambridge University Press, 2006.
- Stuart Russell and Peter Norvig, *Artificial Intelligence: A Modern Approach* **(Third edition)**, Cambridge University Press, 2004
- Boyd, Stephen, and Lieven Vandenberghe. Convex optimization. Cambridge university press, 2004.