

CS 480 / 680: Robotics & 3D Printing

Fall 2018 - [Dr. Lawlor](#) (ELIF 134)

Announcements

- Course overall grades and final comments are [on NetRun's grading area](#). There were some really awesome final projects, thank you!
- [Project 2](#) final draft blog post (480 students) or technical paper (680 students) will be due Thursday, December 13 at midnight [on Blackboard](#) ([log in](#) first).
- The **final exam** will be Thursday, December 13, 10:15am-12:15pm in our usual classroom. The format will be identical to the midterm: a short paper exam, but with more focus on integrated robot design problems. [List of topics to study for the final exam](#).
- [Project 2](#) presentations are December 4 & 6, in [this order](#).
- [Project 2](#) rough draft demos / work session in class Thursday, November 29. Bring parts, code, etc to show me what you have, and get work done.
- [HW4](#) is to measure video latency using [OpenCV](#). It's due Thursday, November 15 [on Blackboard](#) ([log in](#) first).
- Midterm exam grades are posted [on NetRun's grading area](#). The "Course So Far" estimate is quite optimistic, since I haven't seen your Project 1 final drafts yet (and the bar for a good rough draft is low).
- [Project 1](#) final writeups are due by midnight Tuesday, October 30. Write this up as a technical blog post, and send me the URL [on Blackboard](#) ([log in](#) first). Your post should include pictures, video, and/or code, and cover:
 - What **problem** you were trying to solve
 - What **other people** have done on the problem
 - What you **tried** to do
 - What **worked** well
 - What you would **do differently** if you could do it again
- [Project 1](#) presentations are in class October 23 & 25. If you'd like your slides public, [upload your slides here](#).
- The midterm exam is in class this Thursday, October 18. It will be in class, so it won't be quite as involved as the [last midterm exam](#) (which was take-home).
- [Project 1](#) rough draft / proof of concept / work session on Tuesday, October 9
- [Project 1](#) topics are due in class on Tuesday, October 2.
- HW3 is to actually 3D print your model from HW2. Your Polar Express card should now let you access the Engineering lobby's room 201 with the printers.
 - Read and follow [the directions for the UAF Engineering 3D Printers](#).

- If this is your first time printing, start tiny, like 10-20mm across. Big models take much longer to print, are harder to print successfully, and use much more filament!
- Deadline is Tuesday, September 25: either bring your prints to show me in class, stop by [my office](#) hours from 3:30-5pm, or email me photos of your prints!
- [HW2](#) covering [OpenSCAD](#) part design is due midnight Tuesday, September 18.
- [HW1](#) covering online robot navigation is due Thursday, September 6 (it's a lot trickier than HW0, get started early!)
- Please take the [Student Interest Survey](#) by 5pm Thursday, August 30
- [HW0](#) will be on NetRun, and due by 5pm Thursday, August 30
- If you don't have one yet, use your @alaska.edu email to [set up your NetRun account](#), then [log into NetRun here](#). If you don't see a CS 480 / 680 section like below as soon as you log into NetRun, [email me](#) and I can fix it immediately:
 - CS 480 / 680: Robotics & 3D Printing Homepage (Fall 2018)
 - HW0 robot path planning. Due anytime Thursday, August 30.

Reference info

- 11/27: [Robots that fly and swim](#)
- 11/20: [Learning from failure](#)
- 11/15: [3D printer material types](#)
- 11/13: [Robot Motion Planning: RRT, A* search](#)
 - If you couldn't make it to class, [this is the lecture on YouTube](#).
- 11/06: [Depth Camera](#) examples
- 11/01: [Hands-on OpenCV vision experiments](#). I'll provide webcams and trackable markers. You should download and install:
 - The [OpenCV library](#)
 - The [ArUco marker detection library](#) (built on OpenCV)
 - My [robotics repo with OpenCV examples](#)
- 10/30: Last few project 1 presentations, midterm recap, and [OpenCV intro](#)
- 10/16: [Course Review so far](#)
- 10/11: [Configuration Space and Path Planning](#)
- 10/09: Bring your project parts to show me and work on them in class on Tuesday, October 9
- 10/04: Bring a laptop for an [in-class exercise on designing control systems](#)
- 10/02: (Project topics and) [Control System Latency](#)
- 09/27: [PID Controller Tuning](#)
- 09/25: [NASA Robotic Mining Contest & UAF's Robot](#)
- 09/20: [3D Printer Firmware Setup and Stepper Motor Tuning](#)
- 09/18: [Microcontroller Interfacing and Firmware](#)
- 09/13: [Motors for robotics](#) and [stepper simulator](#)
- 09/11: [Advanced OpenSCAD geometry](#)
- 09/06: [Overall 3D Printing workflow including Slicing](#)

- 09/04: [OpenSCAD](#) for part design and computational geometry (please [download](#) and install OpenSCAD before class!)
- 08/30: [Robot Navigation: Terminology & Issues](#)
- 08/28: [High-level overview of Robotics & 3D Printing](#)
- The [course syllabus](#) has grading info, my office hours, and other good stuff.

(Why is this a Google Doc? To make it easy for me to update, and so you can see my updates in real time!)