

SUMMER 2018 RESEARCH—GARDNER LAB

SCHEDULE AND EXPECTATIONS

Summer Research Goals

You will be working on one primary research project throughout the summer; it is my hope that over the course of the summer you will develop a variety of research skills and deepen your knowledge of computer science. Some concrete goals for the summer include:

- Learning the probability background used in queueing theory
- Learning how to simulate queueing systems
- Learning how to develop a mathematical model of a real-world system
- Developing programming skills by writing a simulation
- Practicing reading and interpreting scientific papers
- Learning to effectively communicate your results to a broader audience

Some of these goals are specific to the area of computer science in which we'll be working—performance modeling and queueing theory. Others are broader goals that relate to your development as a scientist. We might refine some of these goals as we settle on a specific project for the summer and determine what particular skills are most relevant for your project. You might also have your own goals that supplement the above, and I encourage you to share these with me.

Weekly Schedule

Below is a rough schedule of what a week will look like this summer.

	Mon	Tues	Weds	Thurs	Fri
am					
lunch			12:30-1:30pm CS dept lunch		12-1:30pm SURF seminar
pm		2-4pm Group meeting	3-5pm Open office hours	2-3:30pm Individual meetings	

A few things to note:

- We will have a **group meeting** every Tuesday from 2-4pm. Usually this meeting will have three parts:
 - Paper reading: We will discuss a scientific paper that I will send to you to read in advance. Sometimes I will ask one of you to lead this discussion.

- Individual updates: Each of you will take 5-10 minutes to update the group on what you have been working on for the past week. This is meant to be a short presentation of what you did so that we all stay up-to-date on what other members of the group are doing.
- Group discussion: We will set aside some time to talk about any high-level questions that have come up over the course of the week. For example, we might decide to have a group discussion about generating random variables for simulation, how to put together graphs for presenting results, etc. Please let me know if there is a particular topic you would like to explore further in group meeting!
- I will have an **individual meeting** with each of you for half an hour on Thursday afternoon. The purpose of this time is for me to get a more detailed update of where you are with your project and for us to discuss the direction of the project and set goals for the upcoming week. You should come to your individual meeting prepared with:
 - A 10-15 minute summary of what you've been working on during the past week. This should be more detailed than what you presented in group meeting, but this is not the time to raise low-level code or debugging issues. This is a good time to talk to me about experiments you're planning, results you've obtained, graphs you've made, etc.
 - A list of your goals for the next week. I recommend making these fairly specific to help you stay on track over the course of the week.
- I will have **open office hours** every Wednesday from 3-5pm. This is a good time to talk to me about lower-level issues you're encountering with your project (for example, debugging issues). I will be in my office during this time; feel free to drop by.
- You will notice that every morning on the weekly schedule is shaded gray. In addition to working with you this summer I am also working on my own research projects, and the mornings (usually up until 1pm) are time that I have set aside to dedicate to my individual research. I may be in my office during these times, but I am not available to meet and I will not be checking email.

Seeley Mudd 007 is available for you to use this summer. I do not require you to work in the lab for your full 40 hours per week, but I strongly encourage you to mutually agree upon fixed hours each week during which you will all be in the lab. Your fellow students are your best resource for getting immediate help on almost any question that will come up in the course of your work this summer, and the best way to have easy access to this resource is to work in the same place. (I do understand that spending the majority of your working hours in a windowless basement might not be the most palatable way to spend your summer. If you find another communal workspace to use regularly, please let me know what that space is so that I know where to find you.)

I will be traveling the week of June 18 and the week of July 9. During these weeks we will either hold individual meetings by Skype or cancel that week's meeting.

Deliverables

Part of being a researcher is communicating your ideas and results effectively to the broader community. This summer, you will have three opportunities to present your work in different styles and to different audiences.

- 5-minute presentation at the SURF Research Blitz (early summer)
 - Audience: other SURF students with little or no CS background
- 2-3 page research paper (end of summer)
 - Audience: future SURF students in CS
- Poster to present at Summer Student Research Poster Session (early fall semester)
 - Audience: Amherst students and faculty with a range of CS knowledge and experience

Workshops

The Library, Academic Technology Services, and the Writing Center are offering several workshops throughout the summer on various topics that will help support you as a researcher. You can find a list of all summer workshops and gatherings on the library's summer resources page, here: <https://www.amherst.edu/library/services/students/summer>

I strongly recommend attending the following selected workshops:

- Ethics Discussion Luncheon (Fri June 8, 12-1:30pm) (NOTE: this one is **mandatory** for SURF students)
- Analyzing Data with Mathematica (Tues-Weds June 12-13, 6-9pm)
- Scientific Programming with Python (Mon-Weds June 18-20, 6-9pm)
- Debugging and Version Control for Programming (Thurs June 28, 6-9pm)
- Scholarly Communication in Science Luncheon (Fri July 13, 12-1pm)
- Effective Poster Design (Fri July 13, 1-2pm) (NOTE: this one is **mandatory** for SURF students)
- Constructing Posters for High-Impact Communication (Mon July 16 OR Tues July 17 OR Weds July 25, 6-8pm)
- Writing Scientific Papers with LaTeX (Tues July 24, 6-8pm)