CMPSC 610
Senior Thesis II
Spring 2019

Syllabus

Course Instructors

Dr. Oliver Bonham-Carter
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Dr. Aravind Mohan
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Instructors' Office Hours

Please visit the web sites of the course instructors to view their office hours. Using the "appointment slots" feature of Google Calendar, you can select an available meeting time. After picking your time slot, the reserved meeting will appear in both your Google Calendar and the instructor's.

- Oliver Bonham-Carter: http://www.cs.allegheny.edu/sites/obonhamcarter/
- Janyl Jumadinova: http://www.cs.allegheny.edu/sites/jjumadinova/
- Gregory M. Kapfhammer: http://www.cs.allegheny.edu/sites/gkapfham/
- Aravind Mohan http://www.cs.allegheny.edu/sites/amohan/

Course Communication

Throughout this semester, students and faculty will use last semester's Slack team to support course communication. Whenever possible, students are also encouraged to post appropriate questions to a channel in Slack, which is available at https://cs-seniorthesis2018.slack.com. All students are also required to use GitHub to submit all of the deliverables for this course's various projects.

Course Schedule

Organized according to the calendar month during which an activity takes place or a project is due, the following table outlines this course's schedule for the entire academic semester. Some of these dates are approximate and, if the need to do so presents itself, it is possible for the course instructors to modify the proposed schedule and notify the class of any changes via email or Slack. Unless it is otherwise noted that there is no class session, it is assumed that, even if there is a course project due or a research task to complete, you will still attend a research group meeting during the scheduled session for this course and participate in the technology tea.

Before February 19	Schedule thesis defense with Pauline Lanzine
January 22	Establish and release a GitHub repository for the project implementation
February 12	Submit a Thesis Draft and Participate in Peer Editing
March 5	Submit three-paragraph status update on your progress
March 12	Submit a Thesis Draft and Participate in Peer Editing
March 26	Submit a Thesis Draft and Participate in Peer Editing
April 2	Submit unbound digital copy of thesis to first and second readers by 4 pm
April 3–April 23	Complete oral defense of senior thesis
April 30	Submit final bound and signed thesis to Pauline Lanzine by 4 pm
Before thesis defense	Submit final changes to the project implementation repository
Entire academic semester	Meet with research group and first reader on a weekly basis
Entire academic semester	Participate in discussions in the Slack team
Entire academic semester	Use GitHub to commit to your research repositories

Please note that, unless evidence of extenuating circumstances is presented in writing to all of the instructors, a student's grade in the course will be reduced if the stated deadlines are not met. Students who have questions or concerns about these deadlines should talk with their first reader.

Required Textbooks

On Being a Scientist: A Guide to Responsible Conduct in Research (Third Edition). Committee on Science, Engineering, and Public Policy, National Academy of Sciences, National Academy of Engineering, and Institute of Medicine. ISBN: 0309119715, 82 pages, 2009.
(References to the textbook are abbreviated as "OBAS").

BUGS in Writing: A Guide to Debugging Your Prose (Second Edition). Lyn Dupré. Addison-Wesley Professional. ISBN-10: 020137921X and ISBN-13: 978-0201379211, 704 pages, 1998.
(References to the textbook are abbreviated as "BIW").

Writing for Computer Science (Second Edition). Justin Zobel. Springer ISBN-10: 1852338024 and ISBN-13: 978-1852338022, 270 pages, 2004.
(References to the textbook are abbreviated as "WFCS").

Overview of the Grading Policies

Final grades are determined after the entire faculty of the Department of Computer Science — not just your course instructor for CMPSC 610 — review and discuss all of the submitted deliverables.

Your grade in CMPSC 610 will be based on a combination of the following activities and deliverables. Percentages are not given because we recognize that the senior thesis experience differs from one student to the next and that there are many variables, such as the nature of the project and the availability of external resources, that can influence the relative importance of these criteria. However, it is important to note that a large percentage of your grade depends upon your written senior thesis chapters and the oral defense of your senior thesis.

- **Class Participation**: This includes meeting regularly with your research group and your first reader. Additionally, this also requires regular contributions, in the form of questions and comments, to the course's Slack team. As previously mentioned in the "Course Schedule" section, all students are required to attend all of the Tuesday class sessions and to fully participate in their research group meetings.

- **Course Repositories**: This involves students creating, at minimum, a GitHub version control repository for each of the assigned course projects and a properly created, documented and released GitHub repository containing project implementation materials. The project implementation repository can be created under course organization or under student's individual GitHub account, in which case it must be shared with both first and second readers. Students should use their "cmpsc-600-610-project-3-2018-2019-allegheny-college-username" repository from CMPSC 600 to commit and release their thesis chapter. Students should regularly use the Travis system and GitHub's tagging mechanism to release PDFs of your thesis document with versions that adhere to the semantic versioning standard. Course instructors will only grade and provide feedback on projects that are stored and released through GitHub.

- **Status Update**: This document should describe the progress that a student has made on completing the research (e.g., program implementation and testing, experimentation, and statistical analysis) for their senior thesis and documenting your results in the senior thesis chapters. Written with feedback from your first and second readers, your status update should be stored and released through the appropriate GitHub repository, which is to be created via GitHub Classroom assignment link.

- **Thesis Draft and Peer Editing**: At various times during the semester each student will be required to submit the current draft of their thesis document via the appropriate GitHub repository. Additionally, each student will be tasked with editing a thesis draft of at least one of their research peers. The peer editing summary is to be released through GitHub as an issue, written using a proper Markdown syntax, following the template provided to students via GitHub Classroom. Finally, detailed edits should be marked in the document directly and provided to the author in a paper or electronic format.

- **Written Thesis**: In consultation with your first reader and in accordance with the stated deadlines, you must work out a schedule for completion of your thesis research and your written document. All senior theses are due, in a proper digital format but not bound, on the stated due date. Working closely with your first reader, you must produce a thesis that both follows the department's style and adheres to professional standards of writing. Your grade in CMPSC 610 will be reduced if you fail to submit your unbound thesis on time.

  Following your defense, you must submit the bound copy of your senior thesis by the aforementioned due date. This document must incorporate any changes that were requested by your first and second reader. Seniors who have not delivered the signed and bound copies of their senior thesis by the stated deadline will receive an incomplete and will not graduate.

- **Thesis Defense**: The standards for this presentation are the same as for the proposal defense — you must give a ten to fifteen minute presentation supported by polished slides and adhere to all of the other stated requirements for this deliverable. Part of your grade for this defense will depend on how well you are able to discuss aspects of your thesis, including implications of your work, connections between your research and other areas of computer science, and possible extensions or improvements of your research ideas. You are expected to work with your first reader in preparing your oral defense. Your grade in CMPSC 610 will be reduced if you do not schedule or conduct your thesis defense by the stated deadlines.

  Unless there are severe extenuating circumstances, students are not allowed to reschedule their defense once they have a confirmed date from Pauline Lanzine. To schedule your thesis defense, please check the Google Calendar of your first and second readers and come to

Pauline's office with three dates and times that fit into your schedule and the schedules of your readers. Do not suggest dates and times that conflict with the schedules of your readers!

Additional Details About Course Expectations and Deliverables

Class Participation

You must regularly attend the scheduled class session and meet with your first reader as needed. We strongly encourage you to schedule office hour appointment with your first reader at least three times during the course of the semester to get individualized feedback and to ensure you are on track with your thesis work. During the class meetings, please be prepared to regularly share status updates on your progress towards completing your research. Your first reader will report on your participation when the department's faculty meet to assign final grades for this course. In addition, students should regularly participate in the discussions on the relevant channels in the Slack team for our course. Your participation on Slack may involve giving a quick status update to your first reader, inviting your first reader to examine a draft of your proposal or compile and run a new version of a program, or, within the bounds of the Honor Code, answering a question from another senior conducting their thesis research. Failure to participate in class discussion and activities, including peer editIng, will result in the reduction of your grade in CMPSC 610.

GitHub Repositories

Every student must accept each of the course projects, thus creating a GitHub repository customized for the student and that specific project. All of these GitHub repositories should have a README file that clearly explains the steps that a student took to complete and release the final version of the assignment. In addition to containing the LaTeX source code that fulfills the assignment, each GitHub repository should feature releases of the compiled PDF files that are tagged with numbers that adhere to the semantic versioning standard described at `http://semver.org/`.

The release of a compiled PDF file can be accomplished automatically by using both the tagging and releases feature provided by GitHub and, additionally, the continuous integration system provided by Travis. Your first and second readers will download, read, and comment on a released PDF at semantic version 1.0.0 or higher. Students who are not able to automatically release PDFs of their projects may instead manually create them by using the GitHub interface. Please see an instructor if you have questions about using GitHub. Failure to either regularly commit to your GitHub repositories or to make releases of your PDFs will lead to a decrease in your final grade for CMPSC 610. Please note that we will continue to use the last GitHub repository from CMPSC 600 to store the final chapters of your thesis. Please see an instructor if you cannot use GitHub.

Using Email

Although we will primarily use Slack for class communication, we will sometimes use email to send announcements about important class matters. It is your responsibility to check your email at least once a day and to ensure that you can reliably send and receive emails. This class policy is based on the statement about the use of email that appears in *The Compass*, the student handbook.

Honor Code

The Academic Honor Program that governs the academic program at Allegheny College is described in the Allegheny Academic Bulletin. The Honor Program applies to all work that is submitted for

academic credit or to meet non-credit requirements for graduation at Allegheny College. This includes all work assigned for these classes (e.g., source code, technical diagrams, and your written content); deliverables that are nearly identical the work of others will be taken as evidence of violating the Honor Code. All students who have enrolled in the College will work under the Honor Program. Each student who has matriculated at the College has acknowledged the following pledge:

> I hereby recognize and pledge to fulfill my responsibilities, as defined in the Honor Code, and to maintain the integrity of both myself and the College community as a whole.

Disability Services

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. Students with disabilities who believe they may need accommodations in this class are encouraged to contact Disability Services at 332–2898. Disability Services is part of the Learning Commons and is located in Pelletier Library. Please do this as soon as possible to ensure that approved accommodations are implemented in a timely fashion.

Welcome to an Adventure in Computer Science

CMPSC 610 affords you the opportunity to pursue independent research in computer science and to ensure that your work has a positive influence on your future plans, the students and faculty at Allegheny College, and a broader society that relies on computer hardware and software. As you complete your senior year, we invite you to pursue this class with great enthusiasm and vigor.