

## CSC-450, Github and Your Project

### ***Introduction***

Github (<https://github.com>) is a web-based file repository that uses *git* for revision control and source code management. In addition, Github implements collaborative features such as bug tracking and feature requests. Github is free to use for public repositories (a monthly charge is assessed for private repositories), and is probably the most popular web-based source code management system. Other source code management systems such as BitBucket (<https://bitbucket.org>) are available as well. Both command line *git* tools and a GUI tool called Github Desktop are available. The command line *git* tool is recommended.

### ***Why use Github?***

- you can easily revert to a previous version of code, if needed
- you can easily see how files change from one version to another
- branches can be used to separate major versions of code (e.g., release and development versions)
- easy collaboration: a collaborator can (a) *fork* (copy) code from a repository, (b) clone the code (i.e. make a local copy for development), (c) make changes to the code, (d) commit (record) the changes and (e) push (save) the changes to the remote repository (i.e., the repository on github.com). When appropriate, the collaborator can then submit a *pull request*, which is a request to merge his/her code with the master version that was originally forked.
- Pull requests can be automatically merged if there are no conflicts; otherwise conflicts are noted and must be manually resolved.

### ***Reproducible Research and your Project***

Reproducible research is a fundamental tenet of scientific research where results are published along with their data and computer code so that any claims made can be directly confirmed. By making your software (and data) available, others will be able to reproduce (i.e., validate) your findings, and expand on what you have done, either by asking different questions about your data and/or modifying the tools used for analysis.

As part of the project requirement, you must make your source code and data available. We will use Github for this purpose (other resources for hosting your code/data can be used with permission). In addition to supporting your research project, having a Github account is a great way to promote the work you have done and will look great on your resume!

### ***Project requirement***

Prior to completing your rough draft, you must create a Github repository for your work. You must include a link to the repository in the methods section of your paper. Note that if you are working

in a group, there should only be one "official" repository. Your Github repository must include a README file with a brief description of your project.

### ***Getting started***

The following tutorial is recommended for getting started if you have not used Github previously:  
<https://guides.github.com/activities/hello-world/>