

# Marcus Hill

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**GitHub:** <https://github.com/marcdh3>

Research interests      Data Science, Representation Learning, Network Security

Education      **University of Georgia**      Athens, Ga  
PhD Candidate in Computer Science      August 2017 – Present  
Advisor: Professor Shannon P. Quinn. *GPA: 3.8.*

**University of Georgia**      Athens, Ga  
B.S. in Computer Science      August 2013 – May 2017  
*GPA: 3.69.*

Publications      **Spectral Analysis of Mitochondrial Dynamics: A Graph-Theoretic Approach to Understanding Subcellular Pathology**  
**Hill, M.**, Fazli, M., Mattson, R., Zain, M., Durden, A., Loy, A. T., Reaves, B., Courtney, A., Quinn, F. D., Chennubhotla, S. C., Quinn, S. P.  
*Proceedings of the 19th Python in Science Conference, 91-97., 2020.*

**OrNet - a Python Toolkit to Model the Diffuse Structure of Organelles as Social Networks**  
Fazli, **M.**, **Hill**, M., Mattson, R., Durden, A., Loy, A. T., Reaves, B., Courtney, A., Quinn, F. D., Chennubhotla, S. C., Quinn, S. P.  
*Journal of Open Source Software, 5(47), 2020.*

**SolarView: Georgia Solar Adoption in Context**  
Tidwell, J. H., Tidwell, A. T., Nelson, S., **Hill, M.**  
*Data, 3(4), 61., 2018.*

Research experience      **Organellar Social Networks**      August 2019 – Present  
University of Georgia  
Our aim was to develop a general and scalable software framework for 4D tracking of spatiotemporal evolution of tagged organelles in fluorescence microscope images.

**Metastatic Organotropism**      August 2019 – Present  
University of Georgia  
We aimed to utilize transcript expression profiling features to classify the site-specific metastases of primary tumors, and to identify the determinants of tissue specific progression.

## **Social Energy Atlas**

University of Georgia

June 2018 – September 2018

Our goal was to better understand the perspectives of everyday people regarding why they adopt solar or not so that we can better inform national policy through real data from real people. The Social Energy Atlas was a project funded by the U.S. Department of Energy Solar Energy Technology Office.

## Teaching experience

### **Instructor of Record, Department of Computer Science (University of Georgia)**

Spring 2021

CSCI 2725: Data Structures for Data Science

I lectured students regarding the design and implementation of data structures and ways to perform comparative analysis of algorithms. Topics include recursion, lists, stacks, queues and priority queues, trees, graphs, dictionaries, decision trees, disjoint set, tensors, and data frames.

### **Teaching Assistant, Department of Computer Science (University of Georgia)**

Spring 2018 - Spring 2019

CSCI 4050/6050: Software Engineering

I assisted the lecturer in grading and instructing the students in fundamental web programming concepts (i.e. full stack) and software engineering paradigms. Topics included software development life cycle; requirements definitions; system analysis, design, implementation, and testing.

### **Teaching Assistant, Department of Computer Science (University of Georgia)**

Fall 2017

CSCI 2720: Data Structures

I assisted the lecturer in grading and instructing the students regarding the design, analysis, implementation, and evaluation of the fundamental structures for representing and manipulating data. Topics included lists, arrays, trees, tables, heaps, graphs, and their memory management.

## Industry experience

**AT&T**, Technology Development Program - Emerging Technologies Atlanta, Ga

Software Developer internship

Summer 2016

I developed a web application and database system for an external client, and performed software testing on an actively used internal application.

## Presentations

**Poster: Spectral Analysis of Mitochondrial Dynamics: A Graph-Theoretic Approach to Understanding Subcellular Pathology** July 2020

SciPy 2020, the 19th annual Scientific Computing with Python conference. An interactive poster can be found here: <https://github.com/Marcdh3/SciPy-2020>

**Poster: Towards Spatio-temporal Modeling of Sub-cellular Protein Structures Using Graph Convolutional Networks** November 2019  
Advancing Informatics in Government and Industry

Skills

**Programming**

Proficient in: Java, Python, C, C++, SQL.

Familiar with: JavaScript

Service and outreach

**Phi Beta Sigma Fraternity, Inc.**

April 2015 – Present

I coordinated educational and social action oriented events for the Athens-Clarke County Community.