Marcus Hill

Email: marcdh@uga.edu **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
University of Georgia August 2019 – Present
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
University of Georgia August 2019 – Present
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.