KEITH CAROLUS

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EDUCATION

Bachelor of Science in Computer Engineering
University at Buffalo | 2018 (expected)
3.91 GPA

General Education
Jamestown Community College | 2014
3.81 GPA - 62 credits obtained while in high school

EXPERIENCE

ISFTP Fellow at Empire Genomics

Summer 2016

Participated in the Imperial Scholars Fellowship Training Program at Empire Genomics, a Buffalo pharmaceutical startup focused on personalized medicine.

- Began developing a web-based clinical laboratory information management system on a LAMP stack for the clinical lab
- Chose an agile development approach with frequent stakeholder feedback
- Developed an automated accessioning system from the previous system via web scraping in Java
- Completed the cytogenetics lab workflow according to stakeholder desires with dynamic user interface involving HTML/CSS, the Foundation front-end framework, PHP, Python, and Javascript including jQuery and AJAX
- Automated error reporting processes and internal monthly reporting
- Learned about business development, regulation, marketing, and operations

Teaching Assistant at the University at Buffalo, Department of Computer Science and Engineering

September 2015 – Present

Provide support for Introduction to Computer Science I and II.

- Teach several weekly recitations attended by approximately 100 students to review course material and assist students in completing weekly object oriented programming projects in Java
- Hold open office hours, provide review sessions, and invigilate examinations

Undergraduate Research Assistant at the Buffalo Neuroimaging Analysis Center (BNAC)

February 2015 – Present

Computational neuroscience research in human connectomics through MRI with Dr. Michael Dwyer. Became a paid research assistant in December 2015. Investigating multiple sclerosis, a neurodegenerative demyelination disease.

- Familiarized with Ubuntu and Bash, configured the Connectome Mapping Toolkit
- Adapted Human Connectome Project image processing protocols in Bash for BNAC imaging modalities with Dr. Dwyer
- Leveraged Amazon Web Services cloud computing for GPU parallelization to reduce tens of hours of image processing
- Developed a mapping between T1w and T2w images with machine learning toolkits in Python
- Configured and debugged the Network Modification (NeMo) tool with Dr. Amy Kuceyeski, a professor of mathematics in neuroscience at Cornell University
- Processed 100 cases including image corrections from 5-year longitudinal study, generating change in connectivity metrics
- Submitted abstract to the AAN conference 2017
- Awarded a grant for computer technology upgrade in the Kenneth M. Alford Medical Education Center

Poster Presentation

Carolus, K., Fuchs, T., Dwyer, M., Zivadinov, R. **Mapping the Connectome in Multiple Sclerosis, Innovations in MRI Imaging**. *SUNY Undergraduate Research Conference, Cobleskill, NY, USA, 2016.*

TECHNICAL PROFICIENCIES

Platforms: Linux, Windows, OS X, Android
Languages: Java, Python, JavaScript, PHP, C++
Applications: Eclipse, PyCharm and Android Studio (IntelliJ), Microsoft Office
Other: HTML/CSS, SQL, Git, JUnit, Jupyter/IPython, MATLAB, VirtualBox

EXTRACURRICULAR ACTIVITIES

- Member of the University at Buffalo Honors College and Honors Peer Mentor
- Recommended and selected for Spark, the University at Buffalo's internationally competitive fellowship and scholarship preparation program
- Selected member of Department of Computer Science and Engineering Undergraduate Student Advisory Board
- Member of ACM and IEEE, participate in skills building workshops and social events including UB Hacking

VOLUNTEER ACTIVITY

Mentor at Cornell University Cooperative Extension

February 2015 – Present

Assist in after school program for high risk youth entitled Tech Wizards, a development program to encourage healthy interest in science, technology, engineering, and math. Present and explain weekly projects.