Tyler J. Banks

Columbia, Missouri • 65201
210-519-8326 • tyler@tylerbanks.net
Website: https://tylerbanks.net | https://github.com/tjbanks

EXPERTISE
Computer Science, Software Engineering, Cyber Security, Machine Learning, Computational Neuroscience, Infrastructure Automation

EDUCATION

Fall 2017 – Present
University of Missouri Columbia, Missouri
PhD Candidate in Computer Science [Expected Graduation December 2021]
Machine Learning, Computational Neuroscience and Automation
Advisor: Dr. Satish Nair

2014 – 2016
University of Missouri Columbia, Missouri
Master of Computer Science
Thesis Project: CNN-Fold: Protein Fold Recognition by Deep Convolutional Neural Networks
Advisor: Dr. Jainlin Cheng

2009 – 2013
University of Texas at San Antonio San Antonio, Texas
BBA Infrastructure Assurance (Cyber Security)
Minor: Computer Science
Advisor: Dr. Nicole Beebe

2011
Associate of ISC^2 CISSP
2009
Comptia A+, Network+, Security+

INDUSTRY EXPERIENCE
More than 10 years working full-time in the professional computing field, with experience in cyber security, software engineering, and systems administration.

2018-Present
Co-Founder and CTO, VUCA News, Headquartered in Bethesda, MD
• Developed a modular, docker-based, API microservice-style infrastructure supporting all aspects of web development, data collection, processing and presentation. https://vuca.news

2017-Present
Cyber Security Analyst, The City of Columbia Government, Columbia, Missouri
• Developed a web-based vulnerability reporting system responsible for reducing network vulnerabilities by more than 90% over the course of one year.
• Wrote City-wide cybersecurity policy, procedures, and incident response plans that put the City of Columbia ahead of its peers using industry metrics
• Developed and managed a comprehensive security training curriculum for more than 1400 City employees. This includes yearly mandatory web-based training, phishing campaigns and weekly cybersecurity information updates citywide.
• Security Information and Event Management (SIEM) development using the ELK stack, UNIX system management and automation, PowerShell and UNIX scripting, PKI/Crypto

2015-2017
Software Developer II, Shelter Insurance, Columbia, Missouri
• SCRUM/Team-based, interdepartmental programming projects -used Java, HTML, PHP, JavaScript SQL, jQuery, REST, Spring/Boot and git.

2012
Cyber Security Intern, Pacific Northwest National Laboratory, Richland, Washington
• Identified web-based attacks on the company network, developed scripts, documented policy

2009 - 2011
Computer/Media Technician, Lackland Independent School District, San Antonio, Texas
• Supported staff, developed student identification system and databases
• Maintained network technology (routers/switches), extensive Windows, UNIX, MS Office

TEACHING EXPERIENCE

Broad range of topics covered as a Teaching Assistant over many years, with experience designing curriculum, developing new teaching tools, grading, overseeing labs, and lecturing

2020

Teaching Assistant, Department of Electrical Engineering and Computer Science, University of Missouri
- CMP_SC 7580/4580: Neural Models and Machine Learning
- Developed curriculum for machine learning and pipeline automation tasks
- Lead a team of developers and designed an original docker-based cyber infrastructure that allows students to access and run to all software needed for their course. [lab.cyneuro.org]

Fall 2018 - Present

Teaching Assistant, Department of Electrical Engineering and Computer Science, University of Missouri
- CMP_SC 4970W & 4980W: Computer Science Senior Capstone Design I & II
- Provided assistance in designing prototype CS senior projects and feedback on essays

Summer 2018

Teaching Assistant, Department of Electrical Engineering and Computer Science, University of Missouri
- ECE 4995: Undergraduate Honors Research in Computational Neuroscience (13 students)
- Full-time lecturer, assisted in development of curriculum (Hodgkin-Huxley theory)

Fall/Spring 2016

Teaching Assistant, Department of Computer Science, The University of Missouri
- CMP_SC 4320: Software Engineering (50+ students)
- Supervised and assisted 14 team programming projects using Scrum software development

2012 - 2013

Undergraduate TA, Department of Business, The University of Texas at San Antonio
- Java I and Java II - Instructional aid for student programming homework and projects

RESEARCH EXPERIENCE

Broad range of research in the cross section of machine learning and neuroscience

Veterans Health Administration (VHA/VA) WOC Affiliate Researcher

Fall 2018 – Present

Harry S. Truman Memorial Veterans' Hospital, Columbia, Missouri
- Data Scientist position

Neural Engineering Laboratory Researcher

2017 – Present

University of Missouri, Columbia, Missouri
- Contributed to a team of PhD student researchers aiming to analyze biologically realistic neural networks. Projects include single cell crustacean cardiac ganglion, Hippocampal Theta models, 27,000 cell+ Amydala models, micturition, and LFP prediction using ML
- Designed programs (SimAgent, BMTools, and SimBuilder) in Python/Tkinter that streamlined the process of designing and running large scale neural simulations on supercomputers.
- Mentored an undergraduate senior in the design of his senior project – automation of parameter selection in small networks and automated rejection sampling
- Maintaining CyNeuro.org website (PHP, HTML, CSS)
- Listed contributor to the Allen Institute's Brain Modeling Toolkit (BMTK) on GitHub

2011 – 2013

Research Assistant

University of Texas at San Antonio, San Antonio, Texas
- Developed offsite malware analysis facilities to study statistical prevalence of malicious code
- Custom software and scripts (Bash, Python) were written to facilitate the needs of a client

AWARDS/ DISTINCTIONS

- Alumni - Dr. Jainlin Cheng's Bioinformatics, Data Mining and Machine Learning Lab, 2016
- NSF SFS Grant Recipient 2011 – $50,000 award that financed final two years of undergraduate education

PUBLICATIONS AND POSTERS

Banks T, Scherrer J, Salas J, Nair S, "**A Machine Learning Tool for Advanced Opioid Dependence Detection**" Manuscript in Progress, 2021

Banks T, Canfield P, Feng F, Nair S, "**Characterizing the Theta Rhythm in the Amygdala**" Manuscript in Progress, 2021

Banks T, Latimer B, Nair S, "**Software Automation and Teaching in the Computational Neuroscience Domain**" Manuscript in Progress, 2021

Opsal N, Canfield P, **Banks T**, Nair S, "**An Efficient Pipeline for Biophysical Modeling of Neurons,**" IEEE EMBS Conference on Neural Engineering (NER'21), Paper, May 4-6, 2021

Banks T, Guntu V, Hummos A M, Nair S, "**Resonant and synchronizing mechanisms in a hippocampal theta model,**" Japan Neuroscience Society Poster, Kobe, Japan, Jul 31, 2020

Wei Q, **Banks T**, Latimer B, Chen Z, Nair S, "**Automating development of biophysical single cell models**" Society for Neuroscience Poster, Chicago, IL, Oct 21, 2019

Nair S, **Banks T,** Latimer B, Chen Z, Lyu Z, Chen Z, Dopp D, Fotoohighiam A, Calyam P, Joshi T, Xu D, "**Software automation for research and training in neural engineering**," Society for Neuroscience Poster, Chicago, IL, Oct 21, 2019

Banks T, Guntu V, Hummos A M, Nair S, "**Characterizing resonant and synchronizing mechanisms in a hippocampal theta model**," Society for Neuroscience Poster, Chicago, IL, Oct 20, 2019

Dopp D, **Banks T**, Samarath P, Kick D, Schulz D, Nair S**,** "**Detailed biologically realistic model of a crustacean cardiac ganglion network**," Society for Neuroscience Poster, Chicago, IL, Oct 20, 2019

Latimer B, **Banks T**, Gahl M, Guntu V, Schulz D, Nair S, "**Computational modeling of the neural circuit of rodent lower urinary tract,**" Society for Neuroscience Poster, Chicago, IL, Oct 19, 2019

Latimer B, Chen Z, **Banks T**, Ho D, V Kanta Chantzi, D B Headly, D Pare, Nair SS, "**Artificial neural networks for prediction of the local field potential,**" Society for Neuroscience Poster, San Diego, Ca, Nov 7, 2018.

Banks T, Wang J, Samarth P, Kick D, Schulz DJ, Nair SS, "**Structure of large cells in crab cardiac ganglion - a computational study,**" Society for Neuroscience Poster, San Diego, Ca, Nov 5, 2018.

Latimer B, **Banks T**, Ankathatti A, Calyam P, Nair SS, "**Software automation for biologically realistic neuro big data simulations,**" Big Data Neuroscience Workshop: Organized by the Advanced Computational Neuroscience Network (ACNN), Cleveland, OH, Sept 6-7, 2018.

SKILLS AND QUALIFICATIONS

Computing skills: Programming, Computer Science, Machine Learning, Artificial Intelligence, Algorithms
Languages: Java, Python, C, C++, C#, Sed, Awk, MATLAB, Octave, JavaScript, TypeScript, PHP, SQL, Cypher

- Public speaking, training, and speechwriting
- Outstanding written and oral communications
- Knowledge of the university environment
- Highly adaptable and capable of learning new areas quickly

PROFESSIONAL ASSOCIATIONS

- Society for Neuroscience student member
- IEEE member