

Summary

Former physicist turned programmer with research experience building complex computational models for physical systems. In recent years interested in data science, specifically the development of visualization tools which provide rich interactions with data. Actively involved with the open source community, and enjoy making contributions that improve people's lives.

Skills

Programming	Python (numpy/scipy/pandas/sklearn), R, C/C++, Matlab, SQL, SAS
Visualization	Altair, Vega/Vega-Lite, Matplotlib, Ggplot, TikZ
Open Source	Version Control, GitHub, Continuous Integration, Code Reviews, Merging PRs
Machine Learning	Semantic Segmentation, Computer Vision, Hidden Markov Models, Stochastic Programming

Experience

Machine Learning Consultant

NEWSCI LABS

Tallahassee, FL

August 2020 - Present

- Created a *Semantic Segmentation* model to detect facial landmarks of cats, dogs, and humans.
- Developed a *Gaussian Hidden Markov* model to dynamically forecast medical records.
- Built entire projects from scratch using Pytorch and Google Cloud Computing.

Open Source Developer

ALTAIR & VEGA-LITE

Tallahassee, FL

February 2018 - Present

- Contributed over 100 commits to the Altair project, significantly improving documentation and user experience.
- Official member of the Altair organization, allowing immediate response to community needs.
- Contributing member to the vega-datasets project, providing a clean, common, source of data for examples.
- Active member of the community surrounding the Vega-Lite ecosystem.

Multi-Physics Modeling

WITH DR. SHANBHAG & DR. GUNZBURGER

Tallahassee, FL

August 2015 - July 2020

- Developed a nonlocal model of corrosion with detailed chemical kinetics.
- Explored the methods of model reduction in the context of chemical reaction networks.
- Implemented novel methods of chemical network reduction in the context of aluminum corrosion.
- **Publications:** Lees, E., Rokkam, S., Shanbhag, S., & Gunzburger, M. (2017). The electroneutrality constraint in nonlocal models. *The Journal of chemical physics*, 147(12), 124102.

Teaching & Outreach

FLORIDA STATE UNIVERSITY

Tallahassee, FL

August 2015 - July 2020

- Developed the core python curriculum for scientific computing students
- Lectured on using scikit learn for data mining.
- Taught students to program visualizations in a modern OpenGL framework.
- Presented multiple workshops on Altair and statistical visualization

Education

Florida State University

DOCTOR OF PHILOSOPHY & MASTER OF SCIENCE IN SCIENTIFIC COMPUTING

Tallahassee, FL

August 2015 - July 2020

- Collaborated with Advanced Cooling Technology to build a nonlocal corrosion model.

Miami University of Ohio

MASTER OF SCIENCE IN PHYSICS

Oxford, OH

August 2013 - July 2015

- Developed computational models on novel open quantum systems to explore collective phenomena.

Appalachian State University

BACHELOR OF SCIENCE IN PHYSICS

Boone, NC

August 2009 - May 2013

- Built and tested methods of organic solar cell fabrication for alternative energy technologies.