Jack Kenney

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Education

University of Massachusetts at Amherst

M.S. College of Information and Computer Sciences – *Bay State Fellow* *GPA: 4.0* May 2022

B.S. Computer Science, College of Information and Computer Sciences *GPA: 3.904* May 2019
Commonwealth Honors College *Magna Cum Laude*

Papers

Jack Kenney, John Valcore, Scott Riggs, Edward Rietman: "Deep Learning Regression of VLSI Plasma Etch Metrology", 2019; [http://arxiv.org/abs/1910.10067] arXiv:1910.10067.

Work Experience

Research Assistant – KDL, CICS, UMass Amherst January 2020 – Present
Researching explainable AI using counterfactual explanations of RL agent decisions and causal models of agent behavior. Performing causal analysis for driver safety in severe weather situations with CASA group, ECE, UMass. Previously a TA for COMPSCI 187: Programming with Data Structures.

Engineering Development Group – MathWorks, Inc. September 2019 – August 2020
Scientific computing software company.

- Built Docker-based microservices in Go for efficient, scalable cloud systems that afford load balancing to contribute to customer success. Highlights include concurrent programming, containerized workflows, and thorough unit and integration testing.
- Contributed to the MATLAB Statistics and Machine Learning Toolbox by refactoring and optimizing graphing code for the dendrogram chart. Improved user experience in Graphics and Charting Tools by modifying charting behavior in C++ source code.

Mobile Application Developer – UMass Amherst January 2019 – September 2019
Partnered with Disability Services and Facilities and Campus Services to create mobile application.

- Created accessible cross-platform mobile application using ReactNative to guide people around campuses using crowd-sourcing model and ArcGIS mapping.
- Team Awarded $10,000 at HackUMass V for Campus Accessibility Challenge November 2017

Research Assistant – Biologically Inspired Neural and Dynamical Systems Laboratory
Laboratory at the College of Information and Computer Sciences created to advance research in biologically-inspired computing and computational methods. October 2017 – September 2019

- Developed deep learning models with TensorFlow for regressing silicon wafer etch measurements with Lam Research Corporation. Prediction accuracy approached the sensitivity of the imaging equipment used for measurement. See publications section for details.

Software Development Intern – Optum, Inc. June 2017 – August 2017
Optum utilizes a massive amount of healthcare data to make insurance decisions and to identify areas where healthcare resources and initiatives would be most impactful.

- Developed an internal research document catalog and repository server. The system was successfully passed to a search team to incorporate into their data pipeline. Collaborated on a care management platform for complex, underserved patients.

Public Projects

Bolete Mushroom Classifier *PyTorch, Cython, MATLAB* github.com/jackkenney/bolete-classifier
Bolete identification algorithm that utilizes modern deep learning techniques and domain knowledge about important mushroom characteristics. Introduces evaluation metrics that improve results.

Reservoir Computer *python, numpy, networkx* github.com/jackkenney/reservoir-computer
Implementation of a reservoir computer with a small-world graph, echo state network architecture and leaky integrate-and-fire neurons. Used for sine wave synthesis given frequency and duration as static input. Resulted in high accuracy regression with minimal network size and training time.

Skills

Theory	Machine Learning, Linear Algebra, Statistics, Calculus, Algorithms, Data Structures
Technical	Julia, Python, C++, Golang, R, MATLAB, Java, JavaScript, Node, React, Redux, SQL, git
Business	Agile Methodology, Teamwork, Leadership, Teaching, Public Speaking, Task Management
Arts	Ceramic Sculpture, Guitar, Bass, Djembe, Improvised Theater, Piano