Samuel Rivera

https://samuelrivera.info
sriveravi@gmail.com | Columbus, OH

SUMMARY

Engineer with 10+ years of experience applying data science to implementing custom machine learning and artificial intelligence solutions at petabyte scale.
• TS SCI clearance, US Citizen

EDUCATION

THE OHIO STATE UNIVERSITY

PhD in Electrical Engineering
Dec 16, 2012 | Columbus, OH
Concentration in machine learning and statistical pattern recognition

MS in Electrical Engineering
March 18, 2012 | Columbus, OH

UNIVERSITY OF DELAWARE

BE in Electrical Engineering
May 15, 2007 | Newark, DE
Concentration in signal processing
Minors in Math and Physics

TECH STACKS

Building: Python • PySpark • PyTorch • Numpy • Scipy • scikit-learn • Pandas • seaborn • plotly/dash • pytest • optuna • OOP
Tools: terminal • EMR • Docker • git
Docs: LaTeX • Markdown • Jira / Trello
Past Projects: R • MATLAB • Keras • TensorFlow • C • C++ • Julia

SOCIETIES & HONORS

2016 1st place team, AFRL LabHack Hackathon (Dayton, OH) • Tau Beta Pi • Eta Kappa Nu • Alpha Psi Lambda • Society of Hispanic Prof. Engineers

PUBLICATIONS

Five journals and several conferences: https://samuelrivera.info/publications/

EXPERIENCE

AMAZON WEB SERVICES (AWS) | Research Scientist

June 13, 2022 – Present | Denver, CO

- Leveraged SageMaker and foundation large language models (LLMs) to build and deploy a document question answering chat bot with 0-shot learning
- Built and deployed an automated ground-truth anomaly detection verification bot leveraging Amazon Elastic Compute Cloud (EC2) and AWS infrastructure
- Developed real-time time-series anomaly detection algorithms that operate at the scale of hundreds of millions of models evaluated every minute
- Developed an A/B model evaluation strategy for production algorithms; Improved recall by 70% while maintaining the false-alarm rate.

BALL AEROSPACE | Principal Engineer, Machine Learning Team

March 29, 2021 – May 12, 2022 | Boulder, CO

- Implemented custom self supervised deep learning architectures for object detection using vision transformer and other backbones
- Implemented time-series forecasting models (VAR) for prediction
- Tuned and deployed deep networks on Linux servers with Docker containers
- Defined and built machine learning solutions to a variety of problems while mentoring junior engineers to help execute the work
- Developed the infrastructure to rapidly iterate over alternative algorithms for custom optimization problems (gradient descent, Bayesian optimization, etc.)
- Performed data analysis and visualization for deciding problem characteristics, solution feasibility, and solution approach from first principles and data insights
- Applied self-supervised deep learning (SSL) approaches for classification in impoverished data settings

MATRIX RESEARCH | Research Engineer, Targeting and Nav

April 28, 2016 – February 26, 2021 | Dayton, OH

• Algorithms and Technical Work

- Experienced in numerical Python ecosystem (Numpy/Scipy/scikit-learn), data analysis, visualization, modeling, OOP, and software best practices
- Technical lead applying single-shot (YOLO) and region based (R-CNN) deep learning frameworks for automatic target recognition (ATR)
- Improved detection accuracy (with synthetic data) over baseline by 30%
- Published adversarial domain adaptation (GAN) algorithms for unsupervised transfer learning; applied these across multiple projects
- Derived and implemented probabilistic graphical models (Bayesian networks) for signal ID in ambiguous radar environments
- Implemented a multiple hypothesis tracker and performance prediction verification using physics based simulation libraries

• Leadership and Business Development

- Oversaw all aspects of research including proposals, cost planning, algorithm derivation, implementation and deployment, and reporting
- Mentored ATR Center Summer School student-researchers and interns in ML and research methods for satellite imagery and DNA classification