Sairam Sri Vatsavai

429 Spring Street, Lexington, KY-40508

[Sairam Sri Vatsavai | LinkedIn](#) | [Sairam954 (Sairam Sri Vatsavai) (github.com)](#)

Phone: (937) 838 9577   E-mail: sairamvgraju@gmail.com

Summary:

- A Ph.D. student in Electrical Engineering with prior three-year professional experience in Machine Learning(ML) and developing enterprise-level software applications, and now working on designing Deep Learning Accelerators with Silicon Photonics. Currently, looking for summer internships in Machine Learning and Software Development.

Technical Skills:

- **Programming Languages**: Python, Java, Groovy, C++, Matlab, and C.
- **ML Framework**: PyTorch, Keras, and Scikit Learn.
- **Web Development:** Html, CSS, Bootstrap, AngularJS, and Javascript.
- **Operating Systems**: Windows, Linux.
- **Database :** MySQL, PostgreSQL and MongoDB
- **Data analysis and Visualization:** Pandas, NumPy, SciPy, Matplotlib, and Seaborn
- **RPA:** Workfusion, UIPath, and Selenium
- **Tools:** Eclipse, PyCharm, Postman, Brackets, S3 browser, Spyder, Google Collab, Notepad++, MS Office, WinSCP, Putty, and Oracle VM
- Possess good Knowledge in OOPs Concepts, Clean Code Practices, Unit Testing, CI/CD practices, Agile Methodology, and GitHub.

Course Work: Machine Learning (ML), Deep Learning with Math, Bayesian Machine Learning, Large Scale Data science*, Advanced Computer Architecture, Digital Computer Structure, Solid State Electronics, Electromagnetic Fields, Photonics Integrated Circuits*

Work Experience:

Research Assistant at UCAT Lab   Since Jan 2020

- Working on designing accelerators to reduce interference time of Deep Learning models and lowering training time for Delay-based Reservoir Computing/RNNs with Silicon Photonics.
- Optimizing the design parameters of Photonics Network on Chip(PNoC) to improve on-chip communication latency, power, and energy.

Software Engineer at EPAM Systems Pvt Ltd   July 2016 – July 2019

- Played various roles as ML Engineer performed data analysis of documents, trained SME on tagging data, prepared training set, trained Information Extraction NER and document classification models, and deployed model on Workfusion Control Tower.
- To improve classification performance, performed OCR tuning, developed feature extractors, carried out Hyper-parameter tuning and post-processing.
- As an RPA specialist transformed manual business processes in Financial, Insurance, and Banking firms to fully automated processes with Intelligent Automation involving the co-existence of web automation, desktop automation, and ML models.
- As Java Developer worked on a web application's back-end involving various design patterns, unit testing, and databases.

Academic Projects:

Deep Sub-Ensembles for Diabetic Retinopathy   Sept 2020 – Dec 2020

- **Libraries used: *Keras, NumPy, Pandas, SciPy and Matplotlib***
- Implemented Deep Sub Ensembles for Diabetic Retinopathy dataset to estimate DL model uncertainty with customized VGG16.
- Imported Kaggle dataset, trained multiple models on Google Collab Pro, and combined them to create Deep Sub Ensembles. Evaluated performance against estimators like Monte Carlo Dropout, Deterministic and Deep Ensembles.

Reservoir Computing Accelerator   Apr 2020 – Aug 2020

- **Libraries used: *Scikit Learn, NumPy, SciPy and Matplotlib***
- Implemented Delay feedback Reservoir computing accelerator with Silicon Microring [1] by modeling Silicon Microring in Python.
- Performed heuristic analysis to learn the optimal node configuration to achieve a lower error rate and training time on temporal and sequential ML tasks.

PROTEUS   Jan 2020 – Apr 2020

- **Libraries used: *Pandas, NumPy, SystemC, Matplotlib, and Lumerical MODE***
- Developed a loss-aware self-adaptive PNoC PROTEUS [2] involving design space exploration of configuration parameters like Q, bit rate, and supported wavelengths to improve throughput, latency, and power. Performed trace-driven system-level simulation with PARSEC benchmarks using SystemC, C++ with NOXIM.

PCM Drift Impact on Model Accuracy   Oct 2019 – Dec 2019

- **Libraries used: *PyTorch, Seaborn, and NumPy***
- Modeled the impact of Phase Change Memory drift with time on neural network models accuracy using aware quantization training by PyTorch and Xilinx Brevitas.

Publications:

[1] Sairam Sri Vatsavai and I. Thakkar. Silicon photonic microring-based chip-scale accelerator for delayed feedback reservoir computing. VLSID, Feb 2021.

[2] Sairam Sri Vatsavai, Venkata Sai Praneeth Karempudi, Ishan Thakkar, "PROTEUS: Rule-Based Self-Adaptation in Photonic NoCs for Loss-Aware Co-Management of Laser Power and Performance," NOCS, Sept 2020.

[3] Venkata Sai Praneeth Karempudi, Sairam Sri Vatsavai, Ishan Thakkar, "Redesigning Photonic Interconnects with Silicon-on-Sapphire Device Platform for Ultra-Low-Energy On-Chip Communication," GLSVLSI, Sept 2020.

[4] S. V. R. Chittamuru, I. G. Thakkar, S. Pasricha, S. S. Vatsavai and V. Bhat, "Exploiting Process Variations to Secure Photonic NoC Architectures from Snooping Attacks," in *IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems*

Education:

The University of Kentucky, Lexington   ***Ph.D. in Electrical Engineering***

GPA 4.0/4.0   *Aug 2019 – Till Date*

Jawaharlal Nehru Technological University, India   ***B-Tech in Electronics and Communication Engineering***

GPA 3.75/4.0   *Aug 2012 – May 2016*