VAIBHAV SAHU

+1(267)928-0709 ⋄ Philadelphia, PA

vsa467@gmail.com ⋄ LinkedIn ⋄ github:vsa1920 ⋄ Portfolio:vsa1920.github.io

EDUCATION

Master's in Scientific Computing, University of Pennsylvania — Expected 2024
Courses: Big Data Analytics, Computer Vision, Deep Learning, Numerical Methods
Scientific Machine Learning, Quantum Circuits and Systems

Bachelor of Science (Physics), Indian Institute of Science — 2016 - 2020
Courses: Pattern Recognition and Neural Networks, Data Analytics, Linear Algebra
Probability and Statistics, Real Analysis, Computational Physics

SKILLS

Data Science & Machine Learning	TensorFlow, PyTorch, Jax, Scikit-learn, Pandas, SQL, Spark, spaCy
Computer Languages & Parallel Computing	Python, MATLAB, C++, OpenMP, Intel Vtune
Computational Math and Plotting	NumPy, SciPy, Intel MKL, Matplotlib, Seaborn
Version Control & Debugging	Git, Visual Studio

EXPERIENCE

Graduate Online Teaching Assistant — Jan 2023 - Present
MCIT-5450: Big Data Analytics, University of Pennsylvania — *Philadelphia, PA*

Research and Development Engineer — July 2021 - June 2022
Simyog Technology Pvt. Ltd. — *Bangalore, India*

- Profiled computational solvers; implemented test cases with **MKL-BLAS** using **OpenMP**
- Optimised Matrix-vector product function using **OpenMP**; 22% improvement in speedup
- Implemented Concurrent-GMRES algorithm for the linear solver; 40% speedup
- Also implemented and debugged automated testing routines written in **Python**

Research Intern — April 2021 - June 2021
Simyog Technology Pvt. Ltd. — *Bangalore, India*

- Setup the Pipeline for simulating Black-box measurement-based IC models using **Neural Networks** in **TensorFlow**
- Translated legacy **MATLAB** code for reconstructing waveforms for IC Models to **Python**
- Trained models on data for different ICs (R^2 values being 0.7-0.9 on noisy data but accurate correlation graphs)

PROJECTS

Masked Face identification using One-Shot Learning on Deep Networks - Used Inception-ResnetV1 as a Siamese Network for face identification - Generated Masked Images using Image editing and implemented face identification with masks - 90% accuracy on unmasked images, 82% accuracy on masked images - PyTorch, OpenCV, NumPy

Generating Adversarial Attack Examples using GANs - Implemented AdvGANs to generate semi-white box adversarial attack examples for any model trained on the CIFAR-10 dataset, the Attack success rate for training and validation sets were 95% and 87% respectively - PyTorch

Efficacy of Neural Network Potentials in Molecular Dynamics - DeePMD is at the cutting edge of NNPs. This is an ongoing project where we are looking at the performance of NNPs on how well they explain phenomena - **Python, DeePMD, LAMMPS**

PUBLICATIONS

Co-Author: "Black-Box Behavioral DC-DC Converter IC Emission Model," 2022 IEEE International Symposium on Electromagnetic Compatibility & Signal/Power Integrity (EMCSI), 2022, pp. 570-574, doi:10.1109/EMCSI39492.2022.9889598.

ACADEMIC ACHIEVEMENTS

- KVPY-SA 2014 Scholar (All India Rank - 258 amongst 40k participants)
- National Talent Search Examination (NTSE) 2012 Scholar