

VAIBHAV SAHU

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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	

EXPERIENCE

Graduate Online Teaching Assistant MCIT-5450: Big Data Analytics, University of Pennsylvania	Jan 2023 - Present <i>Philadelphia, PA</i>
Research and Development Engineer Simyog Technology Pvt. Ltd.	July 2021 - June 2022 <i>Bangalore, India</i>
<ul style="list-style-type: none">Conducted Performance Profiling of computational solvers for bottleneck identification.Implemented test cases utilizing MKL-BLAS with OpenMP for parallelization.Achieved a 22% speedup by optimizing the Matrix-Vector Product function using OpenMP.Developed a concurrent-GMRES algorithm for linear iterative solvers, resulting in a 40% speed improvement.Created automated testing routines using Python to ensure code reliability and quality.	
Research Intern Simyog Technology Pvt. Ltd.	April 2021 - June 2021 <i>Bangalore, India</i>
<ul style="list-style-type: none">Established a pipeline for simulating Black-box measurement-based IC (Integrated Circuit) models using Neural Networks within TensorFlow.Successfully migrated and restructured a MATLAB pipeline into Python for waveform reconstruction of IC Models.Conducted training on various models using diverse IC data, with achieved R-squared (R²) values ranging from 0.7 to 0.9 on noisy data, demonstrating the generation of accurate correlation graphs.	

PROJECTS

Masked Face identification using One-Shot Learning on Deep Networks - Employed Inception-ResnetV1 as a Siamese Network for face identification, generating masked images through image editing. The system achieved a remarkable 90% accuracy on unmasked images and maintained a strong 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 on All-CNN - 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 and 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.

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

ACADEMIC ACHIEVEMENTS

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