

SIDDHARTH SATYAM

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Looking for Software and Machine Learning Internship roles for Summer'23, Availability from Mid Jun'23 to Mid Sept'23.

Education

University of California, San Diego

MS in ECE, Machine Learning and Data Science

Sept 2022 - May 2024, GPA - 3.8/4

La Jolla, California

- Coursework: Statistical Learning, Probability and Statistics for Data Science, Programming for Data Analysis

IIT Kanpur

Bachelor of Technology in Mechanical Engineering

July 2018 - May 2022, CPI - 9.4/10

Kanpur

- Awarded with Academic Excellence award for outstanding academic performance in the session 2020-21.
- Coursework: Deep Learning in Mechanical Sciences, Data Structures and Algorithms, Cryptology, Numerical Methods

Technical Skills

Languages: Python, C, C++, MATLAB, FORTRAN, SQL

Libraries: NumPy, Pandas, Matplotlib, Keras, Tensorflow, Pytorch, DGL, OpenCV, scikit-image, NLTK

Cloud Technologies: SAP Cloud Platform (SAP BTP)

Work Experience

Adaptive Computing and Embedded Systems (ACES) Lab

Research Volunteer

Aug'22 – Nov'22

UC San Diego

- Worked on untargeted Backdoor attacks on Physics-guided Deep Learning models in Turbulence modeling.

Lenek Technologies

Data Science Intern

May'22 – Aug'22

Remote

- Performed the semantic segmentation of Left Ventricle in cardiac ultrasound images with fIoU of 95%.
- Created an Ejection Fraction prediction model with 5.91 test MAE using a R2+1D pytorch architecture.
- Worked on using Swin Transformers, a Vision Transformer architecture, to denoise cardiac ultrasound images.

Larsen and Toubro Infotech

Software Engineer Intern

June'21 – Jul'21

Mumbai

- Created a carbon footprint prediction application for supply chain processes of Chevron using SAP Analytics Cloud.
- Integrated data from HANA in-memory relational database to the web application using OData services.
- Performed a presentation to the Managers for the work carried out during the internship period. [Link](#)

Publications

Long Short-Term Memory Implementation Exploiting Passive RRAM Crossbar Array

IEEE Transactions on Electron Devices, doi: 10.1109/TED.2021.3133197 [[arXiv](#)]

IIT Kanpur

Prof. Shubham Sahay

- Performed a time series prediction using LSTMs, mapping weights to conductance values on passive crossbar arrays.
- Simulated Vector Matrix Multiplication and in-situ training, and demonstrated robustness to RRAM device variations.
- Achieved a reduced energy dissipation of 51.7 times and area efficiency of 6500 times compared to active crossbar arrays.

Energy-Efficient Implementation of GANs on Passive RRAM Crossbar Arrays

Under Review: IEEE Transactions on Neural Networks and Learning Systems [[arXiv](#)]

IIT Kanpur

Prof. Shubham Sahay

- Generated hand-written digits using GANs on MNIST dataset by creating a novel weight-conductance mapping scheme.
- Performed a simulation of efficient fixed amplitude training by in-situ computations on passive RRAM crossbar arrays.
- Generated a true-random noise input for generator, achieving 7.14% drop in energy consumption and greater accuracy

Research Projects

Spectrum Based Fault Localization using GNNs | *Prof. Subhajit Roy, IIT Kanpur* [[report](#)]

Sept'21 - Apr'22

- Performed a transformation of program spectrums as graph networks of test cases and program components.
- Created a GNN model with a custom message traversal order to learn node representations for program components.
- Trained the model to generate bug suspicion probabilities for node representations through feed forward networks.
- Outperformed SOTA metric Ochiai on 96.3% of synthetic spectrums with low bug triggering probability configuration.