

Vishnu Asutosh Dasu

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Education

Pennsylvania State University

M.S. IN COMPUTER SCIENCE AND ENGINEERING

- GPA: 3.95/4.0
- Thesis: Mitigating Unfairness in Deep Learning

State College, U.S.A.

Aug. 2022 - May. 2024

Manipal Institute of Technology

B.TECH IN COMPUTER SCIENCE AND ENGINEERING

- GPA: 8.71/10.0

Manipal, India

Jul. 2016 - May. 2020

Skills

Languages Python, Java, JavaScript, C, C++, Swift, SageMath

Frameworks Django, Flask, Spring, NodeJS, ReactJS, PyTorch, Tensorflow, OpenCV, Numpy, Huggingface, NLTK, OpenSSL, Gurobi

Tools Docker, Git, Jenkins

Databases MySQL, Redis

Work Experience

Pennsylvania State University | RESEARCH ASSISTANT (NLP AND FAIRNESS OF ML)

State College, U.S.A.

- Worked on ensuring neural networks are not biased towards race and sex during classification (fairness of ML).
- Developed an algorithm using Python and PyTorch to modify neuron values to reduce classification bias.
- Designed a novel algorithm using Spacy and NLTK for processing raw conversational data ...

Jan 2023 - Aug. 2023

Tata Consultancy Services | SECURITY RESEARCHER (PRIVACY OF ML)

Bangalore, India

- Designed a secure aggregation protocol to allow multiple devices to collaboratively train a neural network while ensuring their individual data remains private.
- Developed the protocol using Python, C++, and Tensorflow.
- Proposed algorithm was 3x faster than existing secure aggregation methods.

Sep. 2020 - Jun. 2022

Citrix R&D | SOFTWARE ENGINEER INTERN (FULL STACK)

Bangalore, India

- Developed interactive dashboards using React.JS to analyze sensitive data to identify malicious user behavior.
- Developed a trust service using Spring to validate API calls to prevent malicious and unauthorized requests.
- Implemented client-side caching to speed up large GraphQL request by 1.5x to improve latency.
- Configured Jenkins pipelines for CI/CD using YAML.

Jan. 2020 - Jun. 2020

Nanyang Technological University | SECURITY RESEARCHER INTERN (HARDWARE SECURITY)

Singapore

- Developed algorithms using C++ and SageMath to generate optimized ASIC implementations of block ciphers.
- Generated the best-known implementation of the AES MixColumn matrix using 12 XOR2 and 47 XOR3 gates.

Dec. 2019 - Jan. 2020

Tata Consultancy Services | SECURITY RESEARCHER INTERN (ROBUSTNESS OF ML)

Hyderabad, India

- Worked on preventing attacks that exploit CNNs by adding noise to input images to produce misclassification errors.
- Developed an algorithm using PyTorch and autoencoder neural networks to remove adversarial noise added to inputs.
- Proposed algorithm prevented misclassification by retaining 86% of baseline accuracy.

May 2019 - July 2019

Projects

Side Channel Attacks on Stream Ciphers | HARDWARE SECURITY

- Helped developed attacks to retrieve secret keys from stream ciphers running on 32-bit microcontrollers.
- Designed an ML algorithm using PyTorch to identify the hamming weight from oscilloscope traces with 99.7% accuracy.

CurrenSee | ANDROID MACHINE LEARNING APPLICATION

- Developed an Android application to count the value of Indian bank notes from live images using machine learning.
- Implemented an algorithm using Python, OpenCV, and Flask to count the value of bank notes from an image.
- Designed an accessibility focused GUI with an easy-to-use interface and voice commands to aid the visually impaired.

Theia.ai | IOS MACHINE LEARNING APPLICATION

- Developed an iOS application to aid the visually impaired traverse unfamiliar external environments.
- Designed an algorithm using TensorFlow and Python for path planning and traversal using the live camera feed.
- Designed an accessibility focused GUI with an easy-to-use interface and voice commands to aid the visually impaired.

Accomplishments

2021 **Award**, Received \$500 award from DAGsHub for completing the ML Reproducibility Challenge 2021

2020 **Award**, Three-time recipient of TCS Citation Award for outstanding research and contribution to TCS Research

2019 **Winner**, Best Project Award out of 13 teams (Indian Statistical Institute, Kolkata) - 3D coordinate estimation from 2D images

2018 **Runner up**, Intelligent Ground Vehicle Competition (IGVC) - Interoperability Profiles Challenge out of 26 teams