VISHNU ASUTOSH DASU

Google Scholar ◇ GitHub ◇ LinkedIn ◇ vdasu@psu.edu ◇ vdasu.github.io

EDUCATION

- **Manipal Institute of Technology (MIT), Manipal** *July 2016 - July 2020*
  Bachelor of Technology, Computer Science and Engineering (Minor in Big Data) CGPA: 8.71/10

ACADEMIC AND WORK EXPERIENCE

- **Tata Consultancy Services (TCS) Research** *Sept 2020 - June 2022*
  Researcher, Cybersecurity and Privacy *Bangalore, India*
  - Working on anomaly and insider threat detection using ML. Developed a novel framework to detect suspicious IPs in an enterprise.
  - Previously worked on privacy-preserving ML and developed a single-round, fault-tolerant secure aggregation protocol for federated learning.
  - *Technologies used:* C/C++, Python, GMP, OpenSSL, PyTorch, Tensorflow, Eigen
- **Citrix R&D** *Jan 2020 - June 2020*
  Software Engineer Intern, Citrix Analytics for Security (CAS) *Bangalore, India*
  - Developed a trust service to validate API calls, interactive dashboards for data visualization, and optimized GraphQL queries made from the frontend to enable caching and reduce latency.
  - *Technologies used:* Java, Javascript, Spring, React.js, GraphQL, Node.js, Jenkins
- **Nanyang Technological University (NTU)** *Dec 2019*
  Research Intern *Singapore*
  - Developed algorithms and tools to generate optimized ASIC implementations of block ciphers.
  - *Technologies used:* Gurobi, SageMath, C/C++, Python
- **TCS Research** *May 2019 - July 2019*
  Research Intern, Cybersecurity and Privacy *Hyderabad, India*
  - Worked on explainable artificial intelligence and defenses against white-box adversarial attacks.
  - *Technologies used:* Python, PyTorch, Tensorflow, Numpy, OpenCV
- **Tiny Banyan Technologies** *Feb 2019 - May 2019*
  Machine Learning Intern *Remote*
  - Developed deep learning models to detect humans and firearms from CCTV footage.
  - *Technologies used:* Python, Tensorflow, Numpy, OpenCV
- **Indian Statistical Institute** *May 2018 - July 2018*
  Summer Scholar *Kolkata, India*
  - Attended a summer school on image processing and computer vision. Developed a method to estimate *3-D* coordinates of a human from a live video feed using a single camera.
  - *Technologies used:* C++, OpenCV, Eigen
- **Project Manas (AI Robotics)** *Feb 2018 - Feb 2019*
  AI Member, Perception Division *Manipal, India*
  - Predominantly worked on clustering and tracking LiDAR point clouds and sensor fusion.
  - *Technologies used:* C/C++, Python, ROS, PCL, OpenCV, CUDA, PyTorch, Tensorflow, Numpy

SELECTED PUBLICATIONS

- *(Changed for Anonymity)* **Privacy-preserving Federated Learning**
  Under review at *15th ACM Workshop on Artificial Intelligence and Security, 2022*
  Vishnu Asutosh Dasu, Sumanta Sarkar, Kalikinkar Mandal
- **Side Channel Attack On Stream Ciphers: A Three-Step Approach To State/Key Recovery**
  IACR Transactions on Cryptographic Hardware and Embedded Systems (TCHES), 2022
  Satyam Kumar, **Vishnu Asutosh Dasu**, Anubhab Baksi, Santanu Sarkar, Dirmanto Jap, Jakub Breier, Shivam Bhasin
- **[Re] GANSpace: Discovering Interpretable GAN Controls**
  ReScience C, 2022
  Vishnu Asutosh Dasu, Midhush Manohar T.K.

- **Three Input Exclusive-OR Gate Support For Boyar-Peralta's Algorithm**
  22nd International Conference on Cryptology in India (Indocrypt), 2021
  Anubhab Baksi, **Vishnu Asutosh Dasu**, Banashri Karmakar, Anupam Chattopadhyay, Takanori Isobe
- **POSTER: Another Look at Boyar-Peralta's Algorithm**
  19th International Conference on Applied Cryptography and Network Security (ACNS), 2021
  Anubhab Baksi, Banashri Karmakar, **Vishnu Asutosh Dasu**
- **POSTER: Optimizing Device Implementation of Linear Layers with Automated Tools**
  19th International Conference on Applied Cryptography and Network Security (ACNS), 2021
  Anubhab Baksi, Banashri Karmakar, **Vishnu Asutosh Dasu**
- **Machine Learning Attacks on SPECK**
  Security and Implementation of Lightweight Cryptography Workshop (SILC), Eurocrypt 2021
  Anubhab Baksi, Jakub Breier, **Vishnu Asutosh Dasu**, Xiaolu Hou
- **LIGHTER-R: Optimized Reversible Circuit Implementation For SBoxes**
  32nd IEEE International System-on-Chip Conference (SOCC), 2019
  Vishnu Asutosh Dasu, Anubhab Baksi, Sumanta Sarkar, Anupam Chattopadhyay

SELECTED PROJECTS

- **PoS Tagging** [blog] [code] *Individual*
  – Built a Part-of-Speech tagger for the *Brown* corpus using the *Viterbi* algorithm and *Hidden Markov Models* during *Manipal University Summer of Code (MUSoC)*.
- **Re-GANSpace** [report] [code] *Team Size: 2*
  – Reproduced the NeurIPS 2020 paper *GANSpace: Discovering Interpretable GAN Controls* during the *ML Reproducibility Challenge Spring 2021*.
- **CurrenSee** [code] *Team Size: 3*
  – Developed an Android application during Microsoft *Code.Fun.Do* that counts the value of currency captured by the mobile camera using image processing techniques to aid the visually impaired.

AWARDS AND ACHIEVEMENTS

- **TCS Citation Award** *(3× recipient)*: Received the TCS Citation Award and appreciation from the Chief Technical Officer and Head of TCS Research thrice for outstanding contribution to the organization.
- **Best Project Award**: Received the Best Project Award during the *Fifth Summer School on Computer Vision, Graphics and Image Processing*, Indian Statistical Institute (ISI) Kolkata
- **IGVC**: Placed 2^{nd} in the Interoperability Profiles Challenge and 9^{th} overall at *Intelligent Ground Vehicle Competition (IGVC)* 2018. Second-best among all teams from India.
- **ACM ICPC Regionals**: Represented MIT Manipal at the 2017 *ACM ICPC Asia Regional Contest*.
- **DAGsHub Award:** Received a $500 award from *DAGsHub* for completing the *ML Reproducibility Challenge Spring 2021*.
- **Scholarship**: Recipient of the 2013 *National Talent Search Examination (NTSE)* scholarship organized by DSERT. Secured a state rank of 20.

POSITIONS OF RESPONSIBILITY AND TEACHING

- **Google Developers Group (GDG)** *Sept. 2017*
  Mentor *Manipal, India*
  – Organized the *Introduction to Machine Learning* workshop during the *GDG DevFest*. Implemented and demonstrated the working of the *k-nearest neighbors* algorithm.
- **Bootcamp Manipal** [code] *Feb 2018 - Mar 2018*
  Mentor *Manipal, India*
  – Organized the *Automate with Python* workshop hosted by *ACM Manipal*. Implemented and demonstrated web automation using *Selenium* and taught the basics of Python programming.
- **IECSE** *Nov 2016 - Nov 2018*
  Working and Management Committee Member *Manipal, India*
  – Member of MIT Manipal's official computer science club. Helped organize events and workshops to spread awareness and knowledge about computer science.