

# VISHNU ASUTOSH DASU

[Google Scholar](#) ◇ [GitHub](#) ◇ [LinkedIn](#) ◇ [vdasu@psu.edu](mailto:vdasu@psu.edu) ◇ +1 (582) 203-9641 ◇ [vdasu.github.io](https://vdasu.github.io)

## EDUCATION

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- **The Pennsylvania State University** *August 2022 - May 2024*  
Master of Science, Computer Science and Engineering CGPA: 4.0/4
  - Supervised by Professor Gary Tan.
- **Manipal Institute of Technology (MIT), Manipal** *July 2016 - July 2020*  
Bachelor of Technology, Computer Science and Engineering CGPA: 8.71/10
  - Minor in Big Data.

## ACADEMIC AND WORK EXPERIENCE

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- **The Pennsylvania State University** *August 2022 - Present*  
*Graduate Teaching Assistant* *University Park, PA, USA*
  - Graduate Teaching Assistant for *CMPSC 465: Data Structures and Algorithms*, Fall 2022.
  - Responsible for conducting recitations, holding office hours, designing rubrics, and grading assignments.
- **Tata Consultancy Services (TCS) Research** *Sept 2020 - June 2022*  
*Researcher, Cybersecurity and Privacy* *Bangalore, India*
  - Worked on anomaly and insider threat detection using ML. Developed a novel framework to detect suspicious IPs in an enterprise from network logs using autoencoders.
  - Worked on privacy-preserving ML and developed a single-round fault-tolerant federated learning framework with differential privacy guarantees.
  - *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

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- **PROV-FL: Privacy-preserving Round Optimal Verifiable Federated Learning**  
*15th ACM Workshop on Artificial Intelligence and Security, ACM CCS, 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
- **Further Insights On Implementation Of The Linear Layer**  
*Security and Implementation of Lightweight Cryptography Workshop (SILC), Eurocrypt 2021*  
Anubhab Baksi, Banashri Karmakar, Vishnu Asutosh Dasu, Dhiman Saha, Anupam Chattopadhyay
- **Following-up on machine learning assisted differential distinguishers**  
*Security and Implementation of Lightweight Cryptography Workshop (SILC), Eurocrypt 2021*  
Anubhab Baksi, Jakub Breier, Vishnu Asutosh Dasu, Xiaoyang Dong, Chen Yi
- **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

## SKILLS

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- **Beginner:** Go, Rust, Swift, iOS Development, Android Development, Natural Language Processing
- **Intermediate:** C++, Java, Javascript, HTML, Cryptography, SQL, Web Development, Computer Vision, Image Processing, Robotics, ROS, Git, Linux
- **Advanced:** Machine Learning, Deep Learning, Trustworthy ML, Python, C, L<sup>A</sup>T<sub>E</sub>X, Security, Privacy

## SERVICE

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- **Reviewer,** ReScience *August 2022 - Present*

## AWARDS AND ACHIEVEMENTS

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- **TCS Citation Award ( $3 \times$  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<sup>nd</sup> in the Interoperability Profiles Challenge and 9<sup>th</sup> 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*.