

# VISHNU ASUTOSH DASU

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## EDUCATION

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- **Pennsylvania State University** *Aug 2024 - May 2028*  
Doctor of Philosophy, Computer Science and Engineering
  - *Research Area:* Trustworthy AI and Software Security
  - *Advisor:* Prof. Gang (Gary) Tan
- **Pennsylvania State University** *Aug 2022 - May 2024*  
Master of Science, Computer Science and Engineering
  - *Thesis:* “Mitigating Unfairness in Deep Learning”
  - *Advisor:* Prof. Gang (Gary) Tan
- **Manipal Institute of Technology (MIT), Manipal** *July 2016 - July 2020*  
Bachelor of Technology, Computer Science and Engineering

## SELECTED PUBLICATIONS

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\* - Equal Contribution/Alphabetical Order

- **Attention Pruning: Automated Fairness Repair of Language Models via Surrogate Simulated Annealing [pdf]**  
*48th International Conference on Software Engineering (ICSE), 2026*  
Vishnu Asutosh Dasu, Md Rafi ur Rashid, Vipul Gupta, Saeid Tizpaz-Niari, Gang Tan
- **Improving Noise Efficiency in Privacy-preserving Dataset Distillation [pdf]**  
*International Conference on Computer Vision (ICCV), 2025*  
Runkai Zheng, Vishnu Asutosh Dasu, Yinong Wang, Haohan Wang, Fernando De la Torre
- **Privacy-Preserving Data Deduplication for Enhancing Federated Learning of Language Models [pdf]**  
*Network and Distributed System Security (NDSS) Symposium, 2025*  
Aydin Abadi\*, Vishnu Asutosh Dasu\*, Sumanta Sarkar\*
- **Chain-of-Thought Driven Adversarial Scenario Extrapolation for Robust Language Models [pdf]**  
*40th Annual AAAI Conference on Artificial Intelligence (AAAI), 2026*  
Md Rafi Ur Rashid, Vishnu Asutosh Dasu, Ye Wang, Gang Tan, Shagufta Mehnaz
- **NeuFair: Neural Network Fairness Repair with Dropout [pdf]**  
*33rd ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA), 2024*  
Vishnu Asutosh Dasu, Ashish Kumar, Saeid Tizpaz-Niari, Gang Tan
- **Impact of Data Duplication on Deep Neural Network-Based Image Classifiers: Robust vs. Standard Models [pdf]**  
*IEEE Deep Learning Security and Privacy Workshop (DLSP), IEEE S&P, 2025*  
Alireza Aghabagherloo, Aydin Abadi, Sumanta Sarkar, Vishnu Asutosh Dasu, Bart Preneel
- **PROV-FL: Privacy-preserving Round Optimal Verifiable Federated Learning [pdf]**  
*15th ACM Workshop on Artificial Intelligence and Security (AISEC), ACM CCS, 2022*  
Vishnu Asutosh Dasu, Sumanta Sarkar, Kalikinkar Mandal
- **Side Channel Attack On Stream Ciphers: A Three-Step Approach To State/Key Recovery [pdf]**  
*IACR Conference on Cryptographic Hardware and Embedded Systems (CHES), 2022*

Satyam Kumar, **Vishnu Asutosh Dasu**, Anubhab Baksi, Santanu Sarkar, Dirmanto Jap, Jakub Breier, Shivam Bhasin

- **EvoquerBot: A multimedia chatbot leveraging synthetic data for cross-domain assistance** [pdf]  
*Alexa Prize TaskBot Challenge 2 Proceedings*  
Team EvoquerBOT, Penn State University
- **New Results on Machine Learning-Based Distinguishers** [pdf]  
*IEEE Access*, 2023  
Anubhab Baksi\*, Jakub Breier\*, **Vishnu Asutosh Dasu\***, Xiaolu Hou\*, Hyunji Kim\*, Hwajeong Seo\*
- **Three Input Exclusive-OR Gate Support For Boyar-Peralta’s Algorithm** [pdf]  
*22nd International Conference on Cryptology in India (Indocrypt)*, 2021  
Anubhab Baksi, **Vishnu Asutosh Dasu**, Banashri Karmakar, Anupam Chattopadhyay, Takanori Isobe
- **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

## PREPRINTS/UNDER SUBMISSION

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- **Finding Probabilistic Sub-invariants via Search Space Algorithms under Noisy Cost Functions**  
*(Under Review) 32nd International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS)*, 2026  
Ashish Kumar, **Vishnu Asutosh Dasu**, Saied Tizpaz-Niari, Gang Tan
- **Information Theoretic Federated K Nearest Neighbors**  
*(Under Submission) 46th IEEE Symposium on Security and Privacy (S&P)*  
Aydin Abadi\*, **Vishnu Asutosh Dasu\***, Sumanta Sarkar\*
- **Gradient-Free Privacy Leakage in Federated Language Models through Selective Weight Tampering** [pdf]  
Md Rafi Ur Rashid, **Vishnu Asutosh Dasu**, Kang Gu, Najrin Sultana, Shagufta Mehnaz
- **iResolveX: Multi-Layered Indirect Call Resolution via Static Reasoning and Learning-Augmented Refinement**  
*(Under Submission) 46th IEEE Symposium on Security and Privacy (S&P)*  
Monika Santra, Bokai Zhang, Mark Lim, **Vishnu Asutosh Dasu**, Dongrui Zeng, Gang Tan

## ACADEMIC AND WORK EXPERIENCE

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- **Pennsylvania State University** *Aug. 2022 - Present*  
*Graduate Research/Teaching Assistant* *Advisors: Gang Tan, Saeid Tizpaz-Niari, Shagufta Mehnaz*  
– *Projects:* Data extraction attacks on federated LLMs, Trustworthy Code Generation LLMs, Fairness and Robustness of LLMs, Binary Analysis, Software Security
- **Tata Research Development and Design Centre (TRDDC)** *Sept 2020 - June 2022*  
*Researcher, Cybersecurity and Privacy* *Advisors: Sumanta Sarkar*  
– *Projects:* Privacy-preserving Federated Learning, Secure Multiparty Computation, Insider Threat Detection
- **Citrix R&D** *Jan 2020 - June 2020*  
*Software Engineer Intern, Citrix Analytics for Security (CAS)*

– Full-stack Web Developer (Spring Boot, React.js)

- **Nanyang Technological University (NTU)**

*Research Intern*

*Dec 2019 - Jan 2020*

*Advisors: Anupam Chattopadhyay*

– *Projects:* Optimizing hardware implementations of block ciphers

- **Tata Consultancy Services (TCS) Research**

*Research Intern, Cybersecurity and Privacy*

*May 2019 - July 2019*

*Advisors: Chalamala Srinivasa Rao*

– *Projects:* Adversarial attacks and defenses on Convolution Neural Networks (CNNs)

- **Indian Statistical Institute**

*Summer Scholar*

*May 2018 - July 2018*

*Advisors: Dipti Prasad Mukherjee*

– *Project:* 3-D coordinate estimation of humans from 2-D live video feed

## SKILLS

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- **Languages:** Python, C/C++, Java, Rust, HTML/CSS, Go, JavaScript, SQL
- **AI/ML Expertise:** Machine Learning, Deep Learning, Large Language Models (LLMs), Trustworthy AI (Fairness, Privacy, Robustness), NLP, Computer Vision
- **Tools:** PyTorch, TensorFlow, Huggingface, GMP, OpenSSL, L<sup>A</sup>T<sub>E</sub>X, KLEE, LLVM, Angr, Git
- **Areas of Expertise:** Software & Hardware Security, Privacy, Applied Cryptography

## SERVICE

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- **Reviewer:** AAAI 2026, IEEE TIFS (2025), IEEE Access (2025)
- **Artifact Evaluation Committee:** ACM CCS 2025
- **External Reviewer:** NDSS 2025, OOPSLA 2025, IEEE S&P 2025
- **Organizer:** Penn State Security Reading Group (2024 - Present)
- **Judge:** Penn State Undergraduate Exhibition 2025

## AWARDS AND ACHIEVEMENTS

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- **Distinguished Reviewer Award:** Received the distinguished reviewer award for artifact evaluation in ACM CCS 2025.
- **Student Travel Grant:** Received the travel grant to attend ICCV 2025.
- **Internet Society Fellowship:** Received the Internet Society Fellowship to attend NDSS 2025.
- **TCS Citation Award ( $3\times$  recipient):** Received the award for outstanding contribution to TCS.
- **Scholarship:** Received a scholarship to attend the *Winter School on Responsible AI* in Israel.
- **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.
- **DAGsHub Award:** Received a \$500 award from *DAGsHub* for completing the *ML Reproducibility Challenge Spring 2021*.

## PROFESSIONAL MEMBERSHIPS

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- Student Member of the ACM
- Student Member of IEEE