

Pura Peetathawatchai

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EDUCATION

Stanford University

M.S. Computer Science (Specialization in Cybersecurity and Artificial Intelligence)

Stanford, California

March 2025 (expected)

- Cumulative GPA: 3.9 / 4.0
- Relevant Coursework: Deep Learning, Deep Generative Models, Cryptography, Cybersecurity, Bioinformatics, Computer Networks, Trust and Safety

Cornell University

B.A. Mathematics and Computer Science (double major)

Ithaca, New York

May 2022

- Cumulative GPA: 4.0 / 4.0
- Honors: Member of Phi Beta Kappa Honors Society (junior inductee - top 3% of graduating class)
- Relevant Coursework: Machine Learning, Natural Language Processing, Computer Architecture, Operating Systems, Cryptography, Design and Analysis of Algorithms, Mathematical Logic, Chaos Theory, Theoretical Linear Algebra, Abstract Algebra, Number Theory, Decision Theory, Game Theory, Cognitive Science

EXPERIENCE

Stanford Trustworthy AI Research

Graduate Researcher (under Prof. Sanmi Koyejo)

Stanford, California

Jan 2024 - present

- Implementing and investigating the performance of applying universal guidance to differentially private latent diffusion models.
- Co-authored paper "On fairness of Low-Rank Adaptation (LoRA) of Large Models" submitted to COLM 2024.
- Investigated the susceptibility of LoRA-trained transformer models to membership inference attacks.
- Implemented the Likelihood Ratio Attack (LiRA), a state-of-the-art membership inference attack in Python.

Stanford Machine Learning Group

Graduate Researcher (under Prof. Andrew Ng)

Stanford, California

Jan 2023 - present

- Engineering neural networks (DenseNet, Swin Transformer) to attribute methane plumes to landfills and concentrated animal feeding operations (CAFOs) via satellite imagery
- Implemented additional functionality to codebase enabling streamlined support for multispectral input, semantic segmentation and granular error analysis
- Investigated temporal and geographical distribution shifts of landfill satellite imagery and the robustness of deep learning models to such distribution shifts
- Examined potential improvements to training procedure to reduce false positives, including two-tiered approach involving passing input through two separately trained models during inference

Cornell University

Undergraduate Researcher (under Prof. Noah Stephens-Davidowitz)

Ithaca, New York

Jun 2021 – Dec 2021

- Co-authored paper titled "Just how hard are rotations of \mathbb{Z}^n ? Algorithms and cryptography with the simplest lattice" accepted to Eurocrypt 2023. (preprint: ia.cr/2021/1548)
- Implemented many efficient lattice algorithms discussed in recent literature, including lattice sieving and discrete Gaussian basis sampling, in Python. (link: <https://tinyurl.com/ZnCrypto>)
- Investigated extent to which LLL and BKZ reduction algorithms solve SVP on integer lattice basis vectors.
- Analyzed effectiveness and weaknesses of different sampling techniques in generating secure bases as public keys

Siametrics Consulting

Data Scientist (part-time)

Bangkok, Thailand

Jul 2020 – Feb 2021

- Engineered and implemented mathematical models based on Bayes' Theorem to quantify risk of COVID-19 infection in patients through symptom and diagnosis (ICD-10) data.
- Prepared informative slides and graphics to present model's specifications and role in broader epidemiological surveillance system to both technical and non-technical audiences, including NASA and the White House.

SKILLS

Programming Languages: Python (proficient), Java (familiar), OCaml (familiar), JavaScript (familiar), C/C++ (familiar)

Other Skills: Scikit-Learn, PyTorch, PyTorch Lightning, TensorFlow, NumPy, Pandas, SQL, LaTeX, HuggingFace