

Pranav Setpal

+1 (765) 694-9018 | psetpal@purdue.edu | pranav.setpal.net

EDUCATION

Purdue University

B.S. Mathematics, B.S. Computer Science

West Lafayette, USA

Aug. 2024 – Present

Relevant Coursework:

- **Graduate:** Cryptography, Introduction to Abstract Algebra, Real Analysis and Measure Theory
- **Undergraduate:** Computer Architecture, Programming in C, Problem Solving and Object Oriented Programming, Introduction to Discrete Mathematics, Number Theory and P-adic numbers (Reading Course), Honors Real Analysis II, Linear Algebra II, Ordinary Differential Equations
- **Expected by May 2026:** Data Structures and Algorithms, Systems Programming, Algebraic Topology (Graduate), Functions of a Complex Variable I (Graduate)

EMPLOYMENT

Undergraduate Teaching Assistant (UTA) - Purdue University

CS 180: Problem Solving and Object Oriented Programming

West Lafayette, USA

Aug. 2025 – Present

PRESENTATIONS

Adelic Poisson Summation Formula | [Slides](#) [Video](#)

Apr. 2025

We discuss the Pontryagin Duality, a key theorem in Fourier Analysis that extends the Fourier Transform from functions over the reals to functions over locally compact and abelian (LCA) groups. In particular, this lets then extend the Poisson Summation Formula from a sum over the integers to a sum over the rationals using a LCA group called the Adeles

PROJECTS

Cryptography | *Sagemath*

Jun. 2023 – Dec. 2023

- Self-implemented and studied attacks on incorrect implementations of AES, RSA and Diffie-Hellman key exchange.
- Studied the theory behind Elliptic Curve Cryptography through *Elliptic Tales*, cryptohack.org and online resources.

Biomass Prediction | *PyTorch*

Jan. 2023 – May 2023

- Predicts amount of natural vegetation, or above ground biomass, in a region using images from Sentinel-2 satellite.
- Takes advantage of band optimization and implements self-attention through a Vision Transformer(ViT).

Aurman | *C, Bash*

Nov. 2022

- A minimal, fast package manager used to easily install applications from the Arch User Repository.
- Uses curl for interacting with AUR's API and sorts the result by popularity for user convenience.

PERSONAL READING

- **Introduction to Topological Manifolds** by *John M. Lee*
- **Elliptic Tales: Curves, Counting, and Number Theory** by *Avner Ash & Robert Green*
- **Proofs and Refutations: The Logic of Mathematical Discovery** by *Imre Lakatos*

LEADERSHIP

Purdue Mathematics Society | *Secretary*

Aug. 2025 – Present

- We host weekly problem solving sessions that encourage collaboration and exploration of deeper math concepts
- Run undergraduate student symposiums where students present the reserach they do, a mentoring program targeted to aimed to help students get the most from college, and fund attendance to Joint Mathematical Meetings

Cybersecurity Team | *Leader*

Apr. 2023 – Sep. 2023

- Co-led Ace4, where we focused on learning techniques in binary exploitation, reverse engineering, and cryptography.
- Participated in jeopardy-style CTFs. Notable CTFs include VishwaCTF(15th), CryptoverseCTF (31st), DEFCON CTF Qualifier(79th) and ImaginaryCTF (55th). Full list available on ctftime.

Drishtikon - R.N. Podar School | *Tech Team Editing Head*

Nov. 2023

- Drishtikon, an R.N. Podar Initiative, is an annual event undertaken by the students to collaborate and portray strong messages towards the betterment of the community and environment.
- Used Davinci Resolve for video editing to create the backdrops for the main event, as well as teasers and invites

CERTIFICATION

Machine Learning Specialization - *Stanford University*

Nov. 2022 – Jan. 2023

Provides a broad introduction to modern machine learning, including supervised learning (logistic regression, neural networks, and decision trees) & unsupervised learning (clustering, dimensionality reduction, recommender systems)

CS50x - Introduction to Computer Science

Harvard University, by David Malan

Teaches how to think algorithmically and solve problems efficiently. Topics include abstraction, algorithms, data structures, encapsulation, resource management, security, software engineering, and web development.

TECHNICAL SKILLS

Skills: Cryptography, Binary Exploitation, Machine Learning, Web Development, 3D Modelling

Languages: LEGv8 Assembly (subset of ARMv8), Bash, C, C++, Python, Java, Javascript, SQL, L^AT_EX

Frameworks: PyCryptoDome, PyTorch, torchRL, Numpy, TensorFlow, Pwntools, Flask, SQLite, MySQL

Developer Tools: Sagemath, GDB, Radare2, Ghidra, Git, Valgrind