

# Mihir Patil

Computer Science at Purdue University | 2025

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## EDUCATION

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### Purdue University

Aug. 2022 – May 2025

*BS Computer Science Honors (3.85 GPA)*

*West Lafayette, IN*

*BS Mathematics*

**Relevant Coursework:** Data Structures, Linear Algebra, Computer Architecture

## EXPERIENCE

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### Research Assistant

August 2023 – Present

*Innovatory for Cells and Neural Machines*

*West Lafayette, IN*

- Archer: Hybrid and Adaptive Cold-Start Mitigation for Serverless on the Cloud and at the Edge
- Researched and evaluated serverless computing strategies, including keep-alive and prewarming policies, proposing a hybrid policy, and implementing a genetic algorithm to optimize performance in cloud servers and edge devices
- Canopus: Semi-Supervised Semantic Segmentation with Sliced Wasserstein distance
- Used Sliced Wasserstein Distance to the loss function of a semantic segmentation model to improve performance on open-world datasets

### Cloud Engineer

March 2023 – Present

*KeyByte*

*West Lafayette, IN*

- Led the development of Rust-based client software to collect database metrics with **zero overhead** using eBPF
- Led the integration of MongoDB into a genetic algorithm to optimize database parameters and AWS instance size, allowing customers to increase performance by **up to 15%**
- Developed a testing framework to determine the most significant parameters for MongoDB performance

### Officer, Webmaster

September 2022 – Present

*b01lers Capture The Flag Team (CTF)*

*West Lafayette, IN*

- Contributed to solving cybersecurity challenges in web, blockchain, and reverse engineering categories
- Taught boot camp sessions on web exploitation to **100 new members**
- Webmaster for the CTF team website and CTF infrastructure

### Avionics Subteam Member

September 2022 – Present

*Purdue Space Program*

*West Lafayette, IN*

- Developed an ADC driver for the RP2040 MCU in C, using SPI and DMA to achieve a **192kSPS** sampling rate
- Developed a real-time telemetry system to store sensor data from radio downlinks using InfluxDB and a custom charting dashboard
- Designed schematics and routed PCBs for the RF systems and ADC test boards

## RESEARCH

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### Pancreatic cancer analysis using data science

April 2021

- Characterized interactions of the CEACAM6 gene with body systems in pancreatic cancer
- Used R to analyze a **1GB RNA-seq dataset** to observe the effects of CEACAM6 in pancreatic cancer. Utilized **DESeq2** to perform differential expression analysis and **clusterProfiler** to perform pathway analysis.
- Created visualizations for poster including heatmaps, PCA plots, and pathway analysis.
- Published poster in 2021 AACR Virtual Annual Meeting

## PROJECTS

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**Wordle Together** | wordletogether.com | *Node.js, μWebsockets.js, AWS, Svelte*

January 2022 – Present

- Built a multiplayer Wordle game that has been played **over 1 million times**.
- Developed backend using Node.js and μWebSockets.js for performance. Hosted on AWS for scalability.
- Implemented frontend in the Svelte framework, ensuring responsiveness and accessibility.

## AWARDS

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**1st Place**, Raymond James CTF

October 2023

**Best National Security Project**, BoilerMake X

January 2023

**3rd Place**, Raymond James CTF

October 2022

**Semifinalist**, National Merit Scholarship

May 2022

## TECHNICAL SKILLS

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**Languages:** Python, Javascript, R, C++, Rust, Java, C, HTML, CSS, SQL, Kotlin

**Technical Skills:** Raspberry Pi, Arduino, Svelte, InfluxDB, Android Development, eBPF, AWS, Fusion 360, KiCad, Blender, Git, Unity