

# ABHAY SINGH THAKUR

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## EDUCATION

### Rutgers University

Jan 2024 – Dec 2025

*Master of Science in Computer Science*

*New Brunswick, NJ*

### Purdue University

Aug 2019 – Aug 2023

*Bachelor of Science in Computer Science and Data Science (Dean's List and Semester Honors)*

*West Lafayette, IN*

Concentration: Artificial Intelligence and Machine Learning

Relevant Coursework: Data Structures, Object Oriented Programming, Machine Learning, Data Mining, Databases, Cryptography

## EXPERIENCE

### Software Developer Intern | Pacific Northwest National Lab (US DOE) – Richland, WA

Jun 2022 – Oct 2022

- Streamlined resource provisioning by writing **Terraform** and **Ansible** scripts, cutting deployment time by **3x** and **saving 130+ hours** annually for sandbox environments used by various scientific research teams across PNNL
- Deployed and documented testbeds on highly secured on-premise intranet to **simulate cyber threat scenarios**
- Cut network infrastructure storage costs with **infrastructure-as-code** tools, meeting detailed requirements and **reducing costs by 20%**
- Built **Python algorithms** to analyze requirements and automate infrastructure deployment through **IaaS tools**

### Software Engineer | Purdue University – West Lafayette, IN

Aug 2022 – Jul 2023

- Developed and maintained **Circuit**, a peer review tool **integrated with Brightspace LMS**, to facilitate online, anonymous peer review, improving student engagement
- Enhanced Brightspace integration using **Java**, **JavaScript**, and **REST APIs**, enabling access for **10,000+ students**
- Worked with the Innovative Learning team on UI/UX improvements, **increasing user satisfaction by 25%**
- Built and supported **Variate**, a **STEM assessment platform**, allowing instructors to create randomized problems, **improving assessment integrity by 15%**

## PROJECTS

### Sports Betting Arbitrage | React, BeautifulSoup, Selenium, PostgreSQL

Sept 2024 – Present

- Develop a sports betting **arbitrage bot** that scrapes odds from **10+ platforms**, analyzes real-time odds differences, and identifies arbitrage opportunities, with **potential profits of 1-5%** per bet
- Process over **1,000 odds entries daily**, automating odds tracking and arbitrage detection, and perform automated bet placement
- Utilize **Python (BeautifulSoup, Selenium)** for web scraping, NumPy and Pandas for data analysis, and PostgreSQL for data storage; beta features include ML models for odds prediction and human-like automation

### Apex Analytics | Python, SQL, Flask, Dash

Aug 2024 – Oct 2024

- Analyzed over **2GB of F1 telemetry data** (throttle, brake, speed) from the FastF1 API and Ergast API using **Python (Pandas)** to compare driver performance and identify key insights like tire degradation and optimal pit stop windows
- Designed an **interactive UI** using **Plotly and Dash**, featuring heatmaps over track layouts to visualize driver stats and performance across different sectors and race conditions
- Employed a **Python (Flask) backend** for data processing and **SQL (PostgreSQL)** for telemetry storage, with beta features including ML models for tire degradation prediction and automated UI for track performance mapping

### Purdue Circle | React, Typescript, GraphQL, next.js, TailwindCSS

Jan 2022 – May 2022

- Created a **social media and networking app** for Purdue students as part of an Agile team
- Constructed a pipeline to feed user queries processed by **next.js** into a headless **GraphQL CMS** to minimize response payload size by 60% and served them using **TailwindCSS** on multiple platforms
- Modeled a **popularity engine with 70%+ accuracy** and employed features such as user posts, timelines, direct messaging, and reactions to ensure content is socially curated and promoted exclusively by users

### NASA International Space Apps Challenge 2020 | Tensorflow, Tableau, Excel

Sept 2020 – Oct 2020

- Tackled the 'Spot that Fire v3' challenge by creating a **fire recognition system** trained on a live dataset by NASA
- Devised a prototype app to notify dangerous fires nearby with an **accuracy of 82%** and visualized a **dashboard on Tableau** to spread awareness of wildfires

## TECHNICAL SKILLS

**Languages:** Python, Java, Javascript, Typescript, C/C++, HTML/CSS, R, SQL, Assembly (x86, ARM), Shell (Bash)

**Frameworks and Libraries:** React, Angular, Next.js, Django, NodeJS, Tailwind CSS, AWS, GCP, Azure, GraphQL

**Other Skills:** Docker, Kubernetes, PostgreSQL, MySQL, MongoDB, Tableau, Terraform, Ansible, GitHub

## ACHIEVEMENTS

Placed top 10 among 250+ teams at BoilerMake VIII for developing a gamified carbon footprint tracker

Jan 2021

Won 1st place at Purdue Hackers' Hackathon for an Android app to locate lost bikes, handling 50k+ queries

Aug 2020