

ABHAY SINGH THAKUR

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EDUCATION

Rutgers University

Master of Science in Computer Science

Jan 2024 – May 2026

New Brunswick, NJ

Purdue University

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

Aug 2019 – Aug 2023

Concentration: Artificial Intelligence and Machine Learning

West Lafayette, IN

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

EXPERIENCE

Graduate Research Assistant | Rutgers University – New Brunswick, NJ

Jun 2025 – Aug 2025

- Engineered a **3D object detection pipeline** using LIDAR and camera data, improving 3D localization accuracy by 25% compared to baseline 2D-only methods
- Developed a data processing module to **auto-generate 3D bounding boxes** (cuboids), reducing the required manual annotation and correction time by an estimated 40%
- Implemented **2D-to-3D geometric transformations with 98% reprojection accuracy**, utilizing camera intrinsics and extrinsics to precisely map objects to real-world coordinates

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

PharmaGuard | Python, HuggingFace Transformers

Feb 2025 – May 2025

- Built a **distilled language model** combined with **Retrieval-Augmented Generation (RAG)** to detect and explain medication interactions from custom-built drug databases
- Designed a lightweight retrieval system to efficiently search **over 1M+ drug interaction entries**, enabling real-time, context-aware medication guidance

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

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: PyTorch, Tensorflow, Docker, Kubernetes, PostgreSQL, MySQL, MongoDB, Tableau, Terraform, Ansible

ACHIEVEMENTS

Placed top 10 among 250+ teams at BoilerMake VIII for developing a gamified carbon footprint tracker
Won 1st place at Purdue Hackers' Hackathon for an Android app to locate lost bikes, handling 50k+ queries

Jan 2021

Aug 2020