

# Ridha Chowdhury

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## EDUCATION

### THE PENNSYLVANIA STATE UNIVERSITY

University Park, PA | Aug 2021 - May 2025

B.S. COMPUTER SCIENCE | GPA: 3.31/4.00

Awards: 2nd Place Capstone Project | 1st Place Capstone Video | 2x Dean's List | 3x FTC Super Regionals (High School)

Clubs: ASME Design Team (Software Sub-Team Lead), Coders Guild (Technical Director)

## WORK EXPERIENCE

### PSU RESEARCH LABORATORY+CDC | LEAD PRODUCT ENGINEER State College, PA | Aug 2024 - Present

- Led a cross-functional team of five students developing a novel liquid release subsystem, providing ideas, insights, and feedback through regular meetings and hands-on sessions. Acting as a product manager and lead engineer.
- Independently designed prototypes for an ESP32 based IoT Point of Care device using Fusion 360 and 3D printing. Developed machine learning diagnostic software to improve accuracy and functionality with Linear Regression.
- Led monthly progress meetings with CDC representatives, presenting technical updates and guiding discussions on productization, ensuring customer value and aligning on future development.

### ROCKWELL AUTOMATION

#### PART-TIME SOFTWARE ENGINEER

MILWAUKEE, WI | AUG 2024 - PRESENT

- Contributed to a publication in LaTeX on a novel ML classification solution, handling model benchmarking, feature extraction, and Seaborn visualizations, leveraging my verbal and written communication and interpersonal skills.
- Optimized MagneMotion tracking latency by migrating from relational (PostgreSQL) to time-series (InfluxDB).
- Fine-tuned a DBRX LLM on a set of Databricks knowledge bases, enabling Ladder Logic code generation for PLCs.

#### SOFTWARE ENGINEERING INTERN

MILWAUKEE, WI | MAY 2024 - AUG 2024

- Led full Software Development Life Cycle (SDLC) implementation of an AI-powered assembly line tracking system using KNN (achieving 100% accuracy across 75 classes), deploying a Dockerized microservice into an established ecosystem to track movers and persist wear and mileage data across power cycles on an assembly line product.
- Investigated and benchmarked an Apache Spark-based vendor solution for classification within our data pipeline.
- Pioneered on-edge Graph RAG for LLM chatbot web app with HuggingFace Transformers, Neo4J, and LangChain.

#### SOFTWARE ENGINEERING INTERN

MILWAUKEE, WI | MAY 2023 - AUG 2023

- Improved the logical reasoning and problem-solving capabilities of Azure-hosted GPT-4 by implementing Retrieval-Augmented Generation using LangChain Retrievers and the OpenAI embeddings API.
- Built a Java microservice using Jersey & Hibernate, implementing SQL stored procedures and Azure DevOps CI/CD.

### CLARK ASSOCIATES | JUNIOR SOFTWARE ENGINEER

(Remote) Lancaster, PA | Oct 2023 - May 2024

- Designed and implemented a change log service for four features across front-end and back-end with ASP.NET, SQL, and Blazor. Collaborated with QA, including unit tests and acceptance criteria, for smooth deployment.
- Resolved 120+ SonarQube bugs in ASP.NET back-end, reducing technical debt and improving reliability.

### THECODERSCHOOL | SOFTWARE ENGINEERING INSTRUCTOR

Ashburn, VA | Feb 2020 - May 2023

### ALTRUTEC | SOFTWARE ENGINEERING INTERN

(Remote) Cleveland, OH | Jun 2020 - Aug 2020

### FIRST (FLL & FTC) | SOFTWARE TEAM LEAD

Ashburn, VA | Aug 2014 - Jun 2021

### BRIAR WOODS HIGH SCHOOL | COMPUTER SCIENCE TA

Ashburn, VA | Aug 2019 - Jun 2020

## PROJECTS

### ALGOEASY

REACT/TYPESCRIPT, PYTHON/FASTAPI, SUPABASE/POSTGRESQL, LANGCHAIN/CODELLAMA

- Led the development of a full-stack AI-powered tech interview prep web app, integrating Agentic RAG and Llama.
- Stored problems, solutions, user code, and embeddings in a PostgreSQL database using pgvector enabling RAG.
- Implemented AI-driven hints powered by Agentic RAG and CodeLlama, GPU optimized with CUDA for speed.

## SKILLS

Languages: Python, JavaScript, Java, C#, C++, HTML+CSS

Frameworks: React, Svelte, .NET Core, Node.JS, FastAPI, Flask, Django

Dev Tools: Git, GitHub, Azure DevOps, Jira, Agile, SDLC

Systems: Linux, Docker, Kubernetes, AWS, Azure Cloud, Jenkins, CUDA

SQL/NoSQL DBs: PostgreSQL, MySQL, SQLite, MongoDB

Machine Learning: LangChain, PyTorch, TensorFlow, SciKit, Numpy, Pandas

Full-Stack Libraries: TailwindCSS, Redux, Framer Motion, Socket.IO, Axios, Selenium, Recharts, Three.js, Redis, NGINX, SQLAlchemy