

# RAJ RAY CHAUDHURY

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## Education

### Drexel University

GPA: 3.92

*Bachelor of Science in Computer Science (Honors), Minors in Math and Data Science*

*Expected graduation - June, 2024*

- **Dean's List** (All quarters)
- **AJ Drexel Merit Scholarship** (2019 - present)
- **Selected Coursework:** Data Structures & Algorithms, Systems Programming, Software Architecture, Artificial Intelligence, Programming Language Concepts, Advanced Web Development, Database Systems and Design, Probability and Statistics.

## Experience

### Amazon.com, Inc.

Sept 2022 - Mar 2023

*Software Development Co-Op*

*Boston, Massachusetts*

- Employed as the **sole** software developer within the **Robotic Perception and Manipulation team** where I curated **ARMBench**, a large-scale benchmark dataset that was presented at the **RSS conference (Korea)** in July, 2023.
- Developed the **entire software architecture** for an **automated data ingestion pipeline** in **AWS CDK** that picks raw data collected in an Amazon warehouse from **S3** and ultimately submits clean data into the benchmark dataset.
- Implemented Lambda handlers that manage **EC2** instances and generate **segmentation masks** using **opencv** and **numpy**.
- Built a dashboard in **C#** that lets users query **item matrix** databases and deploy **image classification** jobs on **Sagemaker**.
- Developed a **static website** that allows external users to **download the dataset** and keep up to date with progress.

### Susquehanna International Group LLP

Sept 2021 - Mar 2022

*Software Development Co-Op*

*Bala Cynwyd, Pennsylvania*

- Collaborated with the **Electronic Options Trading team** leveraging **Microsoft Azure** where I assisted the development, delivery and support of technical solutions for various proprietary and third party applications systems.
- Developed a **.NET app** that uses **12** parameters to audit up to **500** log files **at a time** through simultaneous **optimized parsing**.
  - Leveraged Python's **multiprocessing** module to maintain shared file queues and improve back-end processing time by **55%**.
  - Maintained fully **automated CI/CD** pipelines for code deployment using **GitLab**, **Team City** and **Octopus Deploy**.
- Built a **REST API** in **Flask & Postman** that lets end users generate **CSVs** by querying a range of historical **MySQL** databases.

### Drexel College of Computing and Informatics

Apr 2021 - Present

*Teaching Assistant for Advanced Python (CS - 172) & Introduction to Bash and C (CS 265)*

*Philadelphia, Pennsylvania*

- Troubleshooted and debugged programs and guided 90 students through to sound understanding of compound **data structures**.
- Developed shell script that uses **regular expressions** to transfer grades from third party ed-tech software to student portal.

### Drexel Pennoni Honors College

Jan 2021 - Sept 2021

*Research Assistant*

*Philadelphia, Pennsylvania*

- Used **Jupyter Notebook** to implement a new algorithm (based on TF\*IDF vectorizers) for **automated test classification**.
  - Delivered **presentation** and **poster** at the Drexel Department of Undergraduate Research & Enrichment Programs conference.
- **Cleaned test data** by grouping inflected forms of words through the **Wordnet Lemmatizer** in Python's **NLTK** library.
- Applied **k-NN (k-Nearest Neighbours)** to **train and test both models** on **10k** randomly selected New York Times articles.

## Projects

### LearnAI | React.js, Flask, Postman, Docker

- Developing a containerized application for the College of Nursing that leverages **AI** to guide students through learning activities.
- Using **OpenAI** endpoints in **Langchain** to interact with **LLMs** while maintaining conversation chains with buffer memory.

### RubikAI | Python

- Rubik's cube solver implemented using **breadth-first** search, **depth-first** search and **A\*** (Manhattan Distance) heuristic.

### Private Wealth Manager | Python

- Applied the **Sortino Ratio** formula to calculate and compare the profitability and risk of different investments using **pandas**.

### Conway's Game of Life | Javascript, HTML, CSS, Node.js

- **Visualization** for a 25x25 board game with random initial configurations where neighbouring dead/alive cells battle it out.

## Technical Skills

**Certification :** Microsoft Azure Fundamentals AZ-900

**Languages :** C++, Python, Java, C, C#, HTML, CSS, JavaScript, SQL, Bash, AWK, Racket

**Databases :** DynamoDB, Oracle Database, PostgreSQL, MySQL, MongoDB

**Amazon Web Services :** S3, Lambda, Sagemaker, EC2, API Gateway, Cloudwatch, EventBridge, Simple Notification Service

**Other :** Node.js, Docker, .NET, Linux, Heroku, React.js, Postman, Ruby on Rails, Bootstrap, Git, Jira, Tableau