

# Broderick Rains

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## EDUCATION

**University of Michigan – Ann Arbor, MI**

**Aug. 2023 – May 2027**

Bachelor of Science, Computer Science

GPA: 3.8 / 4.0

- Relevant Coursework: Data Structures and Algorithms, Computer Organization, Web Systems, Database Management Systems, Data Analysis, Discrete Math, Theory of Computation, Linear Algebra, Calculus

## EXPERIENCE

**Amazon** | *Junior Software Development Engineer* – Detroit, MI

**June 2025 – Present**

- Contributed to the Business Data Technologies (BDT) organization, which builds and manages 1000s of real-time data ingestion pipelines using Managed Service for Apache Flink (MSF) for internal customers.
- Enabled record-level debugging for customers by building and deploying cloud infrastructure across 7 global regions using AWS CDK, which utilized S3 Object Lambdas to decode failed records.
- Migrated Lambdas for MSF apps to use AWS Fargate for bulk CloudWatch alarm updates, which involved building and consuming a Python service client and creating and revising CloudFormation stacks in CDK.

**BASF** | *Software Engineering Intern* – Wyandotte, MI

**May 2024 – June 2025**

- Developed and deployed 3 interactive web applications in Python using Dash, Redis, and Docker to streamline molding data retrieval, visualization, modification, and comparison for 100s of engineers and salespeople.
- Engineered a RESTful API using the FastAPI framework to fetch 1000s of technical data sheets for Polyurethane systems from Microsoft Dataverse, enabling querying based on many system properties.
- Presented software to business and technical stakeholders weekly with live demos and PowerPoint presentations.

**Undergraduate Research Opportunity Program** | *Research Assistant* – Ann Arbor, MI

**Aug. 2023 – April 2024**

- Assessed the reliability of functional diversity databases by cleaning data, constructing optimized Gower's dissimilarity matrices, performing Mantel tests, and mapping IUCN spatial data onto EPM grids in R.
- Designed and presented a poster with abstract, methods, graphics, and summary at the University of Michigan UROP Spring Symposium, winning the UROP Blue Ribbon for outstanding research and presentation.

## TECHNICAL SKILLS

**Languages:** C/C++, Python, Java, JavaScript, R, HTML/CSS, Bash, TypeScript

**Technologies/Frameworks:** Git, AWS, CDK, Flask, Dash, SQL, ReactJS, Microsoft Power Platform, Redis, Cypress

## PROJECTS

**Search Engine** – Python, Bash, HTML/CSS

- Engineered a scalable search engine by implementing an inverted index of +3000 Wikipedia pages using a pipeline of MapReduce programs, a REST API, and a UI to return the top 10 search results for a query.

**Instagram Clone** – JavaScript, Python, Bash, HTML/CSS (ReactJS)

- Developed a clone of Instagram that enables CRUD operations for accounts, posts, comments, and likes via a SQL database, Flask, REST API, and ReactJS components for posts and feeds. Deployed on EC2.

**Pipelined Processor** – C

- Built a 5-stage pipelined processor simulator for the University of Michigan's LC2K ISA, handling data and control hazards, register forwarding, and branch prediction for assembly instructions.