Dakota Bryan

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EDUCATION

Bachelor of Science, **St. Lawrence University**, Canton, NY   August 2019 - May 2023
Majors: **Computer Science (honors), Mathematics**
Cumulative GPA: **3.94/4.00**

RESEARCH & PROJECTS

Fractal Voyager, *CS Honors Thesis*   September 2022 - May 2023
https://fractalvoyager.github.io/ (Tip: enter "iterate z^2+c until z escapes." into the script text box for the Mandelbrot set. Click on the fractal for Julia sets.)

- Developed a web application to fill a void in web-based fractal generating software, an essential aspect of complex dynamics research. It supports point orbit visualizations and parameter customizations to allow for the exploration of any area of the complex plane.
- Crafted a grammar definition and source-to-source compiler to create a domain-specific scripting language. It enables users to generate fractals based on iterated functions and conditions, in both the parameter and dynamical plane.
- Made use of WebAssembly to allow this computationally intensive technology to be run on the web efficiently by compiling all time-consuming aspects of the app to WebAssembly, some while in the browser.
- Authored an extensive research report that outlines the research involved in, and contributions of, Fractal Voyager. I also presented findings via a poster presentation.

Sudoku Graph Theory Web App   November 2022 - December 2022
https://dbryan17.github.io/sudokuGraph/

- Investigated the graph representation of sudoku, and created a web application that generates valid puzzles and allows the user to solve them in both grid and graph form.
- Implemented graph coloring algorithms to auto-solve the puzzle, complete with animations to illustrate how they work.
- Developed many algorithms that represent human-solving strategies, allowing for an advanced help feature which reveals solving methods to the user.
- Delivered a detailed report on the sudoku graph and the implementation of my application. Presented the work via an oral presentation.

Mountain Project Climbing Database & Web Scraper   November 2022 - December 2022

- Designed and provisioned a relational database to hold data from a social media driven rock climbing guidebook.
- Created a web scraper that collected approximately ten percent of all the data on the guidebook application, corresponding to over one million rows in one of the tables.
- Wrote complex SQL queries to gain insights on climbing communities and areas based on the data.

WORK EXPERIENCE

IBM   May 2022 - Present
Software Engineer, Full-Time   June 2023 - Present

- Lead full-stack development of a new access management application by planning development and architecture, while contributing the bulk of the application code. The application uses Next.js, React with IBM Carbon, Java Spring Boot with Hibernate/JPA, IBM DB2, and Cirrus Cloud.
- Meet with design teams, end-users, and upper management to capture business and user needs, translating them into a viable and user-friendly product.

- Aid in the development and testing of UAWeb, the current access management solution which is being replaced. This application supports over 50 internal IBM tools (10 of which are financially significant), including all IBM SAP systems.

Frontend Software Developer, Intern & Co-op   May 2022 - June 2023
- Developed and maintained the frontend of the IBM iERP SAP Security Dashboard which displays SAP user group and system metrics, along with data visualization over multiple landscapes. The application makes routine checks more efficient.

Peterson Quantitative Resource Center, *Peer Mentor*, St. Lawrence University   August 2021 - May 2023
- Tutored fellow students on Math, Computer Science, and Statistics classes by talking through problems, explaining content, and doing practice problems so students improve understanding.

Swahilipot Hub, *Technology Department Intern*, Mombasa. Kenya   April 2022 - May 2022
- Worked on a team to rewrite the foundation's website to include member-only content and change the tech stack from Python, Django to Node.js, Express, MongoDB, and React.js.
- Wrote an analytical paper on technology/entrepreneurship "hubs" in East Africa, utilizing my experience at this non-profit as a case study.

Awards and Honor Societies

Summa Cum Laude, St. Lawrence University   May 2023
- Distinction upon graduation for students earning above a 3.85 GPA.

Phi Sigma Tau Society, St. Lawrence University   April 2023
- Philosophical honor society.

Phi Beta Kappa Society, St. Lawrence University   March 2023
- National honor society for liberal arts and sciences undergraduates.

Pi Mu Epsilon Society, St. Lawrence University   October 2021
- Mathematics honor society.

Pi Mu Epsilon Award, St. Lawrence University   April 2021
- Award for student(s) who have excelled in mathematics through sophomore year.

Community Engagement & Global Experience

Outing Club, *Guide and Treasurer,* St. Lawrence University   August 2020 - May 2023
- Managed the club's $40,000 budget by making decisions on proper spending and tracking all expenditures.
- Led initiatives to allocate our budget in ways which create a more welcoming and diverse outdoor space, including a collaborative effort to create a BIPOC gear grant where BIPOC-identifying students could receive funding for gear purchases.

Outdoor Program, St. Lawrence University   January 2020 - May 2023
Guide   August 2021 - May 2023
- Led frequent trips (including overnights, biking, skiing, climbing, canoeing, and hiking) for the campus community to get more students interested in outdoor experiences and their enjoyment.

Climbing Wall Staff   January 2020 - December 2021
- Taught guests proper belay techniques, supervised the wall, and set new climbing routes of varying difficulty.

Kenya Semester Program, Nairobi Kenya   January 2022 - May 2022
- Studied abroad in Kenya for a semester with a rural and urban homestay component, while taking classes that provided context for these experiences.