

NICHOLAS MCKEE

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EDUCATION

Bachelor of Computer Science, University of Toronto

Expected 2025

Cumulative GPA: 3.68

Awards: Deans List Scholar 2021-2023, New College Council In-course Scholarship.

Relevant Coursework: Data Structures and Analysis, Software Design, Systems and Shell Programming, Operating Systems, Computer Architecture, Introduction to AI, Introduction to Machine Learning, Visual Computing, Databases, Web Development, Computation Theory, Algorithm Design, Linear Algebra, Multivariable Calculus, Introduction to Data Science.

SKILLS

Languages: Python, Java, C, C++, R, JavaScript, TypeScript, HTML, CSS, SQL

Libraries & Frameworks: React, Node.js, jQuery, Svelte, PostgreSQL, Django, NumPy, Pandas, OpenCV, PyTorch

Software & Developer Tools: Linux, Git, GitHub, Bash, Postman

EXPERIENCE

Volunteer Web Developer, Competition Organizer

April 2023 - Present

Speedcubing Canada

Toronto, ON

- Developed a user-friendly web application using **React** and **Flask** to aid contestants in finding and registering for local competitive Rubik's cube-solving competitions.
- Created a system that automatically generates a new webpage when a new competition is announced, displaying event information and registration instructions.
- Redesigned pages to be responsive and easily navigable on mobile devices.

STEM Education Director

May 2022 - August 2022

Griswold Scout Reservation

Gilmanton Ironworks, NH

- Led a team of 4 instructors in teaching science and engineering concepts to **over 2000** kids aged 12-17.
- Designed and developed new curriculum and engineering projects including lessons on CAD software and 3D printing.

PROJECTS

Automated Scorecard Reader — [Python](#), [NumPy](#), [OpenCV](#), [PyTorch](#), [GraphQL](#), [OAuth 2.0](#)

- Developed an application to automatically detect and extract handwritten results from photos of competitor scorecards from competitive Rubik's solving competitions.
- Created a **multi-layer convolutional neural network** with a **99% character accuracy** after only 50 epochs.
- Scanned results are uploaded to the World Cube Association official database using a **GraphQL** API with **OAuth 2.0**.

University of Toronto Exam Browser — [Java](#), [Swing](#), [PostgreSQL](#)

- Collaborated as part of a team of 8 students to create a Java application strictly adhering to the **Clean Architecture** and **SOLID** programming principles facilitating easy access to an archive of past exams relevant to their coursework.
- Implemented forum feature enabling students to comment on individual exams and communicate with others.
- Created a **Swing** GUI which communicates with a **PostgreSQL** database over SFTP.

Cubing Competition Forecaster — [Python](#), [NumPy](#), [Pandas](#), [PostgreSQL](#)

- Created an application to predict a person's odds of winning competitive Rubik's cube competitions using **Monte Carlo approximations**, achieving a validation accuracy over **75%** and a **top-3 error rate** of less than **5%**.
- Implemented efficient, fully vectorized **NumPy** and **Pandas** code to run over **10 million** simulations in under 30 seconds.
- Created a **PostgreSQL** database containing past results from over **200,000** individuals for model training.

One on One — [React](#), [Django](#), [Python](#), [TypeScript](#), [Bootstrap](#) [CSS](#)

- Collaborated as part of a team in creating a **full-stack web application** to help users easily schedule online meetings.
- Created a responsive client-side web app using **React** which communicates via a **RESTful API** with a **Django** backend.

Huffman Text Compressor — [C++](#), [CMake](#)

- Created a command-line application to compress and decompress plaintext files into a binarized format.

ACHIEVEMENTS & LEADERSHIP

World Cube Association (WCA)

- Assisted in organizing over **20+** day-long events with up to **300** participants each, generating over **\$70,000** in revenue.
- Senior member of the disciplinary committee - an official WCA committee responsible for enforcing organizational regulations and policies, investigating violations, and issuing sanctions.

Middlesex League Championship Swim Meet - 3rd place: 500 freestyle

Eagle Scout - 2020: Raised funds and designed and constructed a boardwalk on conservation land.