

# ANIRUDH CHHABRA

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## EDUCATION

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### University of Waterloo

Sep 2024 – Present

Bachelor's degree, **Computer Science** (Honours with **Co-op**)

Waterloo, Ontario

- **Relevant Coursework:** Data Structures & Algorithms, OOP, Probability, Calculus II, Linear Algebra, Mechanics

## TECHNICAL SKILLS

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**Programming Languages:** C/C++, Python, Java, JavaScript, Dart, HTML/CSS

**Frameworks & Libraries:** React, Next.js, Node.js, Express, Flutter, Bootstrap, Tailwind CSS, Figma

**Systems & Databases:** PostgreSQL, MongoDB, Firebase, REST APIs, Niagara Workbench (N4)

**Tools:** Git, Linux, Bash

## EXPERIENCE

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### Undergraduate Researcher - Diffusion Acceleration

Sep 2025 – Present

Computing Research Association of North America (CRA) & University of Waterloo

Waterloo, Ontario

- Selected for competitive undergraduate early-research program in diffusion models for image/video generation.
- Exploring optimizations (caching & sparse computation) to reduce inference latency and improve scalability.
- Conducting benchmarking and literature review across multimodal datasets and using models like BLIP3o.

### Frontend Developer & UI/UX Designer - Co-op

May 2025 – Aug 2025

Plant Operations Department - University of Waterloo

Waterloo, Ontario

- Collaborated in cross-functional team of engineers to modernize building automation dashboards across 20+ facilities.
- Designed and implemented responsive HVAC UIs that enhanced operator efficiency and cut deployment time by 30%.
- Automated repetitive design and configuration workflows, bridging engineering and UX to streamline the process.

### Web Designer

May 2025 – Present

UW Computer Science Club

Waterloo, Ontario

- Collaborating with the Web Dev team to design and develop responsive layouts for the Class Profile 2025 site.
- Improving branding consistency for a widely used student resource and implementing accessibility features.

## PROJECTS

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### Dedup Storage | C++, Node.js, React, Express, Multer, Custom C++ CLI

[GitHub](#)

- Developed a C++ deduplicated file storage saving system that splits files into chunks, storing only unique chunks.
- Implemented a React-based frontend displaying real-time file stats, chunk stats & deduplication efficiency.
- Integrated cross-platform CLI (Windows/macOS/Linux) with Node.js backend to manage file operations.
- Demonstrated efficiency with multiple overlapping file uploads, emphasizing storage savings & maintaining intuitive UX.

### Contiguous Memory Allocator | C

[GitHub](#)

- Implemented a simplified model of C's contiguous memory and heap with custom `cmalloc` and `cfree` functions.
- Designed linked data structures to track allocations, detect gaps, and manage variable-sized nodes.
- Built a debug utility to visualize memory layout and validated correctness with automated test cases.

### Municipal Energy Dashboard | React, Chart.js, Tailwind

[GitHub](#)

- Developed a dynamic React dashboard visualizing municipal energy consumption and GHG emissions.
- Implemented intelligent filters, KPIs, and automated trend insights to enable data-driven analysis.
- Engineered responsive Chart.js visualizations (bar, line, pie) with transitions and visual feedback for diverse facilities.

### OnTrack | Node.js, Express, Playwright, Bootstrap

[GitHub](#)

- Collaborated in a 4-person team to build a course planner for UW students to track graduation requirements.
- Automated scraping of 4,000+ UW course pages via Playwright and implemented prerequisite validation logic in JSON.
- Implemented backend logic for course validation and streamlined collaboration through GitHub PR workflows.

## LEADERSHIP & VOLUNTEERISM

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### Faculty of Mathematics Ambassador | University of Waterloo

Sep 2025 – Aug 2026

### Volunteer | Auxiliary/Gift Shop - Thompson General Hospital

Jun 2023 – Aug 2024

## AWARDS

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**Awards:** The Governor General's Academic Medal, UW President's Scholarship of Distinction, Glacier and MDS AeroTest S.T.E.M Scholarship, Ted Rogers Entrance Scholarship, Arthur Sanche Memorial Scholarship Award.