

ARNAV MALHOTRA

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EDUCATION

Bachelor of Engineering in Software Engineering

York University

Expected May 2027

Toronto, ON

EXPERIENCE

Software Engineering Intern

Jun 2025 – Dec 2025

Quarkle.ai

Remote

- Developed a public document sharing system enabling authors to showcase their work, driving **30% increase in engagement** and facilitating collaboration among **500 writers**
- Architected an agent-based AI system using FastAPI WebSocket server and Flask backend, engineered smart data and context pipelines with vector databases to optimize retrieval, improving context retention by **85%** and reducing response latency by **40%**
- Optimized frontend with debouncing, auto-save, and streamlined editing in Next.js, yielding **50% faster performance** and improved UX

Software Developer

Oct 2024 – Apr 2025

York University

Toronto, ON

- Developed and deployed a full-stack calendar application that surfaces diversity events using FastAPI, MongoDB, and React; achieved adoption by **200 faculty and staff**
- Automated content generation via Selenium scraping across **10 sources** and leveraged LLMs for description generation, cutting manual curation effort by **90%**

Research Fellow

May 2024 – Jul 2024

Indian Institute of Technology, Roorkee

Roorkee, Uttarakhand

- Designed an automated slice selection method ranking MRI slices by voxel intensity, retaining top five lesion-rich slices per scan for FCD type II lesion detection
- Trained and evaluated nnU-Net models on MRI data from **85 subjects** using 5-fold cross-validation, achieving improved segmentation performance to aid presurgical evaluation
- Published research findings in *Frontiers in Artificial Intelligence*, contributing to advancements in automated medical imaging for epilepsy treatment

PROJECTS

OneTimeTable ([link](#)) | FastAPI, MongoDB, Next.js, Redis

- Built a full-stack student dashboard with adoption by **50 users** across **4 universities** and **35 Chrome extension installs**
- Automated course data extraction via LLM pipelines with **95% accuracy** on schedules and syllabi, adding multi-format export options for external calendar integration
- Enhanced performance and usability via Redis caching, reducing average **load times by 60%**

SuperchargedNotes ([link](#)) | FastAPI, PostgreSQL, Next.js, TypeScript

- Developed a full-stack AI platform leveraging OCR to convert **5 note formats** (PDF, JPG, PNG, etc.) into structured Markdown with **90% layout accuracy** and real-time previews
- Engineered study tools—including quizzes, flashcards, and summaries generated directly from notes—reducing student preparation time by up to **40%**

INeedHelp@YorkU ([link](#)) | React, FastAPI, PostgreSQL, JWT

- Developed a centralized platform aggregating **80 York University support services** using PostgreSQL for resource tagging, secure authentication, and admin controls; attracted **1000 visits** and **50 recurring users**
- Increased service accessibility and awareness, reducing student search time for support resources by up to **25%**

TECHNICAL SKILLS

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

Frameworks: FastAPI, Next.js, React, Node.js

Databases: PostgreSQL, MongoDB, Redis, Vector DBs

Libraries/Tools: PyTorch, NumPy, Pandas, Matplotlib, Selenium, Git, Docker, Tailwind CSS, JWT