Nirmal Chaudhari

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EDUCATION

McMaster University Sep 2021 - May 2026
B.Eng. Software Engineering – Year 4 (GPA: 3.9) Hamilton, ON
- Awards: 2024 MODELS Silver Medal, NSERC USRA, McMaster Excellence Award, Dean's Honour List (2021-2025)

EXPERIENCE

Vena Toronto, ON
Software Engineer Co-op May 2024 – Aug 2025
- Built Microsoft add-ins with **ReactJS** & **SSP** servers using **Springboot** & **Hibernate** in an **Agile** environment.
- Directly responsible for planning the migration of code from an existing monolithic service to a **microservice-based architecture**. Led weekly architecture meetings, design planning and cross-team coordination.
- Enhanced UX by replacing inefficient polling with **Server Sent Events** (SSE), reducing refresh time by **80%.**
- Improved performance of backend endpoints by **~150%** via parallelization; used **Jaeger** for profiling.
- Enabled multi-cloud **AWS-Azure** deployment with automated **Jenkins** integration for seamless deployments.
- Built an internal server using **Model Context Protocol (MCP)**; exposed **API** tools and integrated with **agents**.

McSCert Hamilton, ON
Software Research Assistant Sep 2023 – May 2024
- Won **2nd place** in international 2024 MODELS competition for contributions to jPipe DSL **compiler** ([paper](#)).
- Extended **Java** compiler to support patterns and abstract composition for CI/CD pipeline justification.
- Developed **visitor-based** traversal logic to decouple data structure from operations for feature development.
- Created a VS Code extension using **Typescript** to visualize justification diagrams in real time.
- Enabled syntax highlighting, and error diagnostics by integrating a custom **Language Server Protocol (LSP).**

Software Research Intern May 2023 – Aug 2023
- Developed new merge tools using **Python** to improve source-code merging for Python & Java code.
- Designed an **Abstract Data Structure** to depict the source code of statically & dynamically typed languages.
- Integrated our developed tool with **Git**, to allow developers to use our tool instead of the default.
- Improved the semantic accuracy over existing solutions, jDime & Spork, by **19%** and **90%** respectively.
- Regularly **performed tests** to validate results by using the developer's desired version as the benchmark.

McMaster EcoCAR Hamilton, ON
CAV Software Developer Sep 2023 – May 2024
- Collaborating with 40+ people to implement autonomous driving features in a car for EcoCAR EV Challenge.
- Using data obtained from **IMU**s to estimate the vehicle's position in trajectories through **Dead Reckoning**.
- **Clustering** data obtained from various sensors using **K-Means** and **DBScan** algorithms in Python.
- Implementing **PyUnit** tests and simulating various algorithms through the Carla **SIL** Environment.

PROJECTS

Calliope Aug 2025
- Designed & developed a cross-platform journaling app in **Flutter** with local NLP sentiment analysis on entries.
- Regularly collaborated with psychologists from UQAM to refine and identify the most critical **requirements**.
- Converted Hugging Face's **NLP model** to **TFLite** with **float16 quantization**, reducing the model size by **65%**.
- Built a dynamic feedback loop using a **filter vector** to adapt model output based on user's feedback.
- Designed a re-syncing mechanism to update the model when the app is online, downloading and saving the most accurate model locally for future use.

1KEY May 2024
- Designed & developed a scalable chat system for companies using **Model-View-Controller** (MVC) architecture.
- Used **repository** & **pipe+filter** architectures to support secure message transmission via cryptosystem filter.
- Integrated an AI chat for users to ask company specific information by using **OpenAI API** and passing in context.

SKILLS

Programming Languages: Python, Java, C, C++, Bash, JavaScript, TypeScript, SQL, Dart
Framework & Libraries: NodeJS, ReactJS, Flutter, Spring Boot, Hibernate, ETL, Quartz, TensorFlow, JUnit, PyTest
Tools: AWS, Azure, Git, Docker, MongoDB, MySQL, Postman, Jaeger, VisualVM, Terraform, Cloudflare, Jira, Confluence,