Manav Patel

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EDUCATION

Toronto Metropolitan University — **Toronto, ON, Canada**
Master of Engineering in Computer Engineering, AI Specialization — *May 2024 – Dec 2025 (Expected)*
Bachelor of Engineering in Computer Engineering, Software Specialization — *Sept 2019 – Apr 2024*

EXPERIENCE

Junior Software Engineer — Nov 2024 – Present
Cashly Inc. — *Oakville, ON, Canada*
- Contributed to the end-to-end development of a scalable AI-driven platform, building modular backend services and frontend interfaces using the **PERN** stack.
- Designed and implemented robust database structures, ensuring reduced query execution times and enabling efficient data retrieval for dynamic client interactions.
- Collaborated on integrating and optimizing machine learning models, improving accuracy in core platform functionalities.

Teaching Assistant — Sept 2024 – Present
Toronto Metropolitan University — *Toronto, ON, Canada*
- Managed labs on Introductory **Java** programming, including **OOP** and **JUnit**, and on **Software Design and Architecture**, focusing on design principles and microservices.
- Assisted with troubleshooting **NetBeans**, **Apache Tomcat**, and **Google Cloud** deployment tools, ensuring smooth lab sessions.
- Coordinated lab schedules, assignments, and exam prep, ensuring clear communication with **50+** students per semester.

Software Engineer Intern — May 2023 – Aug 2023
FGF Brands — *Toronto, ON, Canada*
- Optimized Intranet and Workflow Management Portals with **20+** features using **ASP.NET MVC**, streamlining workflows and increasing usage by **35%** across **1,500+** employees.
- Enhanced the vendor management application integrated with **SAP**, boosting productivity by **20%** through automation of appointment scheduling and invoice submissions.
- Refined **MS SQL Server** databases and integrated **Power Automate** workflows, reducing data processing times by **95%** and enhancing system efficiency.
- Implemented automated tests using **Selenium** with **C#**, decreasing bug occurrences by **10%** and enhancing application reliability.

Software Engineer Intern — Sept 2022 – Apr 2023
Lockheed Martin — *Ottawa, ON, Canada*
- Developed **RESTful APIs** with **Express.js**, improving data exchange between the server and client.
- Designed and maintained **PostgreSQL** databases, optimizing server logic and queries to cut response times by **30%** across two full-stack applications.
- Assisted in developing **NLP** and **Reinforcement Learning** models with **Python**, and **Jupyter**, for an internal professional development platform, improving the completion of training tasks by **45%**.
- Attained **90%** code coverage using **JEST** unit tests, enhancing code quality and minimizing bugs.

PROJECTS

ResNet with RDENet Oscillation Block | *GitHub* — Dec 2024
- Designed an architecture integrating a custom-designed **RDENet Oscillation Block** model into **ResNet18** to improve image classification on a polluted **FashionMNIST** dataset, addressing rotational and noise-induced variations in the dataset.
- Evaluated model performance under original, polluted, and mixed data scenarios with **5-fold cross-validation**, achieving a **7%** increase in accuracy over baseline models.
- Implemented a comprehensive machine learning pipeline using **PyTorch**, encompassing data preprocessing, model training, hyperparameter finetuing and evaluation to enhance image classification performance.

BiasAware - Engineering Capstone Project | *GitHub* — Apr 2024
- Conducted prompt engineering to generate **3,000+** images across **12** social biases, establishing a comprehensive database for analyzing biases in AI-generated images.
- Trained and fine-tuned a **Stable Diffusion** model using **HuggingFace** to generate and assess biased images, enhancing the identification and understanding of social biases.
- Developed a responsive web application with **MongoDB**, **Express.js**, and **React** to present the bias analysis results effectively.

TECHNICAL SKILLS

Languages: Python, JavaScript, Java, C, C++, C#, MATLAB, SQL, HTML/CSS
Frameworks/Libraries: React, Node.js, Express.js, PyTorch, TensorFlow, Keras, Scikit-Learn, pandas, NumPy, Matplotlib, HuggingFace, JUnit, Jest, TestNG, Selenium
Databases: Oracle DB, PostgreSQL, MySQL, MongoDB, Microsoft SQL Server
DevOps: AWS, Azure, Google Cloud Platform, Docker, Kubernetes
Developer Tools: Git, Jira, Jupyter, Google Colab, VS Code, PyCharm, IntelliJ IDEA, Visual Studio