HETU PATEL

Third Year Computer Science Student at Toronto Metropolitan University, ON

</> https://patel-hetu.github.io/hetu-patel-portfolio/
hetu.patel@torontomu.ca
in www.linkedin.com/in/hetu-patel-cs-tmu
https://github.com/Patel-Hetu

EDUCATION

Toronto Metropolitan University (Formerly, Ryerson University) **Jan 2023 - Present**

Bachelor of Science (Honours)**, majoring in **Computer Science** and **minor in Business Management.

- Fundamentals of Computer Science, Computer Organization, Data Structures and Algorithms, Software Engineering, C and Unix/Linux, Ethics, Discrete Mathematics, Calculus, Linear Algebra, Probability and Statistics, Machine Learning, Computer Vision, Human-Computer Interaction, Computer Security.

CORPORATE EXPERIENCE

SEAPAX **Jan 2024 - April 2024**

Web Developer Intern *Toronto*

- Increased SEAPAX's online engagement by **20% (session duration)** and **15% (reduced bounce rate)** through development of a user-friendly product website. Built a **Venture Capital CRM system** that streamlined lead nurturing by 30%, improving communication and conversion for potential investors.
- Engineered 100% improvement in website functionality through responsive software solutions using **Agile methodologies**. Utilized a **tech stack** to handle high volumes of concurrent B2B user sessions, ensuring seamless B2B operations.

Scotiabank **Jan 2024 - June 2024**

Mentee *Toronto*

- Secured a coveted mentorship in Scotiabank's Women in Technology Mentorship Program (Unlock Your Future 2024). This program provided invaluable career exploration through rotations across **data analyst, software developer, and project manager teams**. These rotations helped me solidify my path in technology.

Invision Software Solution **Sept 2022 - Dec 2022**

Software Engineer Intern *India*

- Utilized **Agile methods (e.g., Scrum)** to gather client technical needs and employed **API integration techniques** to deliver 3 impactful projects.
- Showcased full-stack development skills across diverse projects using technologies like **Python, ReactJS, LAMP stack**, **Django, Unity, and ARCore.** Delivered innovative solutions like **AR/VR construction visualization software**, enhancing communication and project efficiency.

PROJECTS and CERTIFICATES

OurMeal App

Toronto Metropolitan University

- Designed a prototype app in **Visual Studio 2022 using Visual Studio and .NET framework**, employing event-driven programming and **graphical user interface (GUI)** design principles to enhance usability and streamline household supply management.
- Developed **two distinct interfaces**- one for fridge door interaction and another for mobile devices, focusing on **human-computer interaction (HCI)** techniques such as contextual navigation, intuitive screen layouts and workflow optimization to ensure a seamless and user-friendly experience.

Automated Basketball Object Detection and Tracking

Toronto Metropolitan University

- Developed a basketball analytics system using **AI-driven YOLOv8 and Roboflow models**, achieving **73.7% mAP50-95** for real-time player, ball and rim detection after **fine-tuning over 15 epochs**.
- Utilized advanced machine learnign techniques like **UMAP, K-means clustering, ONNX runtime and CUDA for GPU-accelerated training**, enaling accurate team classification and reducing runtime to **9.6ms per frame** for live sports applications.

Clustering Analysis of Diabetes Risk and Progression

Toronto Metropolitan University

- Preprocessed the **Pima Indian Diabetes dataset** by handling missing values, scaling features with **MinMaxScalar**, and conducting exploratory analysis using **correlation heatmaps and pair-plots**. Applied **K-Means and Hierarchical Clustering** to classify individuals into Low, Medium and High-Risk categories based on health like glucose, BMI and insulin levels.
- Visualized clustering results with **scatter plots, radar chartstoo and dendograms**, providing actionable insights for early detection and tailored diabetes interventions, while comparing algorithm efficiency and structure insights.

Comprehensive Security Analysis and Cryptographic Implementation

Toronto Metropolitan University

- Implemented **AES and RSA encryption**, analyzed speculative execution vulnerabilies **(Spectre)**, and demonstrated secure communication methods through **secret-key and public-key encryption.**
- Identified buffer overflow vulnerabilies, conducted **packet sniffing and spoofing**, **configured VPN tunnels** and bypassed firewalls to understand and mitigate real-world security threats.

Car Rental DBMS Design and Implementation

Toronto Metropolitan University

- Designed and normalized a comprehensive relational database for a car rental service, **adhering to 3NF and BCNF principles** to ensure data integrity. Implemented **schema** for managing customers, vehicles, rentals, payments and maintenance records, ensuring scalalibity and security.
- Developed simple and advanced **SQL queries** for operational insights, such as rental patterns and maintenance costs. Integrated a **Unix shell-based interface** for seamless database interactions, enhancing user accessibility and functionality.

LEADERSHIP

Current

Founding President of Hindu Students' Association at Toronto Metropolitan University

Past

President of Academic Integrity Ambassadors
Vice President Education of Toronto Metropolitan Students' Union
Student Representative of Academic Plan 2025-30 Advisory Group of Toronto Metropolitan University
Senate and it's standing committess of Toronto Metropolitan Univeristy

SKILLS

- **Programming Languages:** Python, Java, C, Bash, Lisp, R, Assembly Language, Javascript, HTML and CSS, LaTeX, Smalltalk-80, Elixir, Rust, Haskell, PHP, SQL, Visual Basic
- **Tools/Frameworks:** VS Code, Git and Github, Google Colab, AWS, GCP, Agile and SCRUM, SDLC, Django, Node.js, React, Tailwind CSS, iQuery, MySQL,DBMS, MongoDB, Oracle DB, TensorFlow, PyTorch, scikit-learn, Keras, Roboflow, OpenCV, Siglip Vision, Pandas, NumPy, Matplotlib, JUnit, Wireshark, OpenSSL, Pharo, Figma, .NET