Om Patel

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EDUCATION

McMaster University Hamilton, ON

Bachelor of Applied Science in Honors Computer Science (Co-op), Minor in Statistics *09/2022 – Present*

- **Relevant Coursework:** Computer Systems and Architecture, Machine Learning, Algorithms and Complexity, Databases and SQL, Probability and Statistics, Data Privacy, Software Testing, Computer Networks and Security
- **Awards:** Engineering Award of Excellence, Dean's Honor List

TECHNICAL SKILLS

Programming Languages: Python, C, C++, Java, JavaScript, SQL, R, MATLAB, Golang, HTML, CSS, Bash

Technologies: DDocker, Git, REST API, Selenium, TCP/IP, WAN/LAN, Wireshark, OWASP, GraphQL, Cisco Packet Tracer

Tools and Libraries: TensorFlow, PyTorch, NumPy, Pandas, OpenCV, NLTK, MediaPipe, Flask, FastAPI, Matplotlib, Seaborn, SciPy, Scikit-learn

Cloud: AWS {EC2, S3}

TECHNICAL EXPERIENCE

AI & Machine Learning Engineer (MacAi) 09/2024 – Present

Python | FastAPI | OpenCV | NumPy | Pandas | TensorFlow | Flask | PyTorch | C *Hamilton, ON*

- Developed a real-time pose analysis system with MediaPipe and TensorFlow, achieving 99% accuracy in pose recognition.
- Enhanced system feedback by integrating reinforcement learning, enabling dynamic adjustments based on user performance.
- Utilized advanced Python libraries (NumPy, Pandas) to automate sequence segmentation and motion analysis.
- Collaborated cross-functionally to deploy scalable APIs using Flask and FastAPI, ensuring seamless integration.

Software Programming Instructor (Ultimate Coders) 07/2024 – Present

Python | JavaScript | Java | C++ | HTML | CSS *Toronto, ON*

- Implemented a comprehensive computer science curriculum in Python, Java, and C++, resulting in 90% student satisfaction.
- Guided students through coding exercises and projects, resulting in a 30% improvement in programming skills.
- Created interactive learning materials that elevated student engagement by 30% in key programming concepts.

Administrative Assistant (BAPS Charities) 06/2021 – 01/2022

MS Office | DBMS | Adobe Suite | Git | Power BI *Toronto, ON*

- Streamlined office workflows using project management tools, improving team efficiency by 20%.
- Managed databases and tracked project progress, ensuring 90% data accuracy.

TECHNICAL PROJECTS

Real-Time Pose Analysis System (MacAI Club Project)

FastAPI | MediaPipe | OpenCV | NumPy | Pandas | TensorFlow | Scikit-learn | Matplotlib | Flask | PyTorch

- Built a 99%-accurate pose recognition system with MediaPipe, FastAPI, and TensorFlow, processing 30 FPS video streams.
- Developed RL-based adaptive feedback, using OpenCV for annotated visual corrections and joint angle calculations.
- Automated sequence segmentation and motion analysis on 10,000+ frames with sliding window algorithms.

Dimensionality Reduction – PCA (Personal)

NumPy | Scikit-learn | Matplotlib | Pandas

- Applied PCA and SVD for dimensionality reduction on the LFW dataset and Synthetic TNC dataset.
- Visualized 2D and 3D projections of 100+ face images and noisy circle data, extracting top 20 eigenvalues with PCA.
- Reduced dimensions by 90%, achieving 95% explained variance, and visualized data representation with Matplotlib.

Algorithmic Maze Solver (Personal)

C | Prim's Algorithm | DFS | SVG | libxml

- Implemented a maze generator using Prim's algorithm, generating over 100 unique maze patterns in under 2 seconds.
- Developed a solver using DFS with backtracking, reducing solution time by $\sim$ 20% compared to brute-force methods.
- Rendered mazes as scalable SVG images, improving visualization clarity and accessibility for up to 100 users concurrently.