Manthan Desai

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EDUCATION

University of Western Ontario, London, Ontario ***Graduated: April 2025***

Bachelors of Science in Computer Science

Relevant Coursework: Data Structures & Algorithms, Object-Oriented Design, Operating Systems, Databases, Artificial Intelligence

SKILLS

Languages: ***Proficient*** Python(7yrs) · Java(6yrs) · JavaScript(5yrs) · C/C++(3yrs) · Typescript (3 yrs) · PHP (3 yrs) · SQL (3 yrs)
Intermediate Swift(2yrs)

Software/Libraries: React.js · Next.js · Node.js · TensorFlow · MongoDB · PostgreSQL · Django · Anaconda · Nebari · Pandas · NumPy · OpenAI API · Pinecone · AWS · Azure · Docker · Jenkins · REST APIs · Git · Agile · CI/CD · LLM · AWS · GCP · Langchain · Docker · Kubernetes · JupyterNotebook · iOS · Bootstrap · Bash · Jira · Pinecone · Django · Pandas · ElevenLabs API · Google Cloud Run · Angular

EXPERIENCE

Software Engineering Resident ***May 2025 - Present***

Headstarter *Remote, Canada*

- Built 14+ machine learning, ai-engineering and full-stack projects in fast-paced software team environments.
- Developed 5+ neural networks in Python & C++, 11 apps in Typescript on AWS/Vercel with dev and production environments.
- Implemented llm-chaning, hyperparameter tuning, fine tuning on 10+ LLM models controlling for latency & accuracy,
- Employed POSIX threading and mutex control in Python backends for controlled parallel execution of LLM tasks.
- Designed AI pipelines deployed on Linux servers, integrating CI/CD via Docker and Jenkins.

Software Engineering Fellow ***July 2024 - Sep 2024***

Headstarter *Remote, Canada*

- Developed and deployed 5+ AI-driven applications and APIs using Next.js, AWS, OpenAI, Pinecone, and Stripe API, achieving 96% accuracy with feedback from 100+ users.
- Collaborated with Amazon, Bloomberg, and Capital One engineers to refine expertise in microservice architecture, Git workflows, and industry best practices.
- Designed and integrated robust APIs, reducing API response time by 40% and improving user experience.
- Project: Rate My Professor AI Assistant — Built an AI-powered Jupyter-based tool that summarizes professor reviews and visualizes insights, leveraging OpenAI and custom fine-tuned prompts.

Software Engineering Intern ***June 2024 - Aug 2024***

RadicalAI *Remote, Canada*

- Built an intuitive frontend chat application using React.js and TypeScript, integrated with OpenAI's GPT-3.5 API, increasing platform user engagement by 40%.
- Designed and deployed backend services for a chatbot with Node.js and MongoDB, enabling real-time communication, improving system reliability by 30%, and reducing latency by 25%.
- Assisted in developing Kai, an open-source AI Teaching Assistant, improving instructional workflows and increasing educator productivity by 50%.
- Built internal utilities leveraging C++ CLI wrappers for performance-sensitive routines.
- Collaborated with diverse teams to deliver scalable, user-centric applications, leveraging Agile workflows and best practices.

Software Engineer ***Feb 2024 - Aug 2024***

ScaleAI *Remote, Canada*

- Developed performance-critical prompt pipeline tools in Python and C++ using OOP for modular, reusable code.
- Built multithreaded Python daemons for real-time log ingestion, increasing throughput by 60% with thread-safe design.
- Wrote infrastructure test cases across backend modules, achieving over 70% coverage, and refactored legacy systems for improved data structure efficiency and algorithmic performance.
- Collaborated on optimizing platform data pipelines running on Linux-based systems, debugging OS-level issues.

Business Systems Analyst Intern ***May 2022 - Aug 2022***

TD Securities *Toronto, ON*

- Analyzed and reported on Key Risk Indicators (KRIs), visualizing trends and managing 40+ technology assets to ensure risk mitigation.
- Facilitated discussions with technology asset owners, addressing application findings and driving the development of 50+ effective risk remediation plans.
- Co-led Scrum meetings to train 30 technology asset owners on issue management processes and risk remediation workflows, improving team efficiency.
- Collaborated with cross-functional teams to identify and resolve potential system risks, ensuring compliance with organizational standards.
- Utilized tools such as Microsoft Office and Jira to streamline risk reporting, improve communication, and optimize workflows.

PROJECTS

Property Recommendation System | Personal Project *(~40 hours)* - GitHub Link ***May 2025***

- Developed a Python-based, notebook-integrated app to recommend top real estate comparables using NLP, structured data pipelines, and custom-trained XGBoost models.
- Standardized infrastructure using modular RESTful API design in Python (FastAPI), and deployed Dockerized backend and TypeScript-based React frontend services.
- Built responsive TypeScript interfaces and optimized frontend state management for seamless user interaction and data visualization.
- Improved data parsing accuracy by 32% through pandas-powered preprocessing, regex-based field extraction, and schema validation utilities.

AI Voice Assistant | Personal Project *(~30 hours)* - GitHub Link ***May 2025***

- Engineered a real-time AI voice assistant using TypeScript and Vite, reducing command response latency by ~30% through efficient frontend bundling and optimization.
- Deployed OpenAI's GPT-3.5 API to enable natural language understanding, successfully handling over 150+ unique user queries across testing scenarios.
- Leveraged ElevenLabs API for high-quality, lifelike text-to-speech output, increasing user engagement and command completion rate by an estimated 40%.
- Crafted a fully responsive interface with Tailwind CSS, delivering smooth performance across devices and maintaining 60 FPS rendering in modern browsers.

Anesthesia Pocket Guide | Team Project *(~70 hours)* - GitHub Link ***Nov 2022 - Mar 2023***

- Developed a mobile application to help medical students grasp key anesthesia concepts through visuals and interactive quizzes.
- Integrated 5 essential calculators frequently used by anesthetists, increasing workplace productivity.
- Conducted a user study with 30 medical students, demonstrating a 15% efficiency improvement in day-to-day tasks.

WorkoutAI | Team Project *(~24 hours)* - GitHub Link ***Aug 2023***

- Created an AI-powered workout trainer as a React web application to provide real-time feedback on exercise form using image classification.
- Trained a TensorFlow CNN model on a dataset of 200+ images, achieving 92% accuracy in detecting exercise posture.
- Deployed the AI model to a React-based front-end interface, delivering real-time feedback to users and laying the foundation for a mobile application.