




Shubham Patel

 [shubhampatel77.github.io](https://github.com/shubhampatel77)

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SKILLS

Programming Languages: Python, C++, SQL, JavaScript, HTML/CSS

Technologies: PyTorch, Huggingface, scikit-learn, OpenCV, Git, React, Node.js, Unix Shell, AWS

EXPERIENCE

The University of Texas at Dallas | Richardson, TX | *ML Researcher* Jan 2024 - Present

- **Retrieval-Augmented Generation (RAG):** Investigating a temporal decision mechanism for finding an **optimal split** between parametric and non-parametric memory in RAG models advised by *Prof. Vincent Ng*
- **Text-to-Image modeling:** Developed a general-purpose **personalized image editing** method, combining multiple user-given images using **diffusion models** advised by *Prof. Yapeng Tian*

IIT Madras | Chennai, India | *Undergraduate Researcher* Jul 2022 - Nov 2022

- **Holographic Case-based Reasoning in Cognition:** Successfully implemented Case Deletion with **7%** increased accuracy to an already existing Case Addition framework, advised by *Prof. Sutanu Chakraborti*
- **Risk management:** Worked on Optimized Certainty Equivalent (OCE) Risk Measure with multi-armed bandit applications in finance, to obtain tighter concentration bounds on the estimate

Feynn Labs | Guwahati, India | *Machine Learning Intern* May 2022 - Jul 2022

Led a team of **5** people and analyzed Electric Vehicle market in India for a potential opportunity to enter and gain profits, implemented ML algorithms for market segmentation, developed a model for our product with **10-11%** profit margin

EDUCATION

The University of Texas at Dallas | Richardson, TX Aug 2023 - Present

Master of Science in Computer Science (M.S. in CS)

GPA: 4.0/4.0

Specialization in Intelligent Systems

Indian Institute of Technology Madras (IITM) | Chennai, India Jul 2019 - May 2023

Bachelor of Technology in Mechanical Engineering (B.Tech. in Mech. Engg.)

Minor in Artificial Intelligence & Machine Learning (AI & ML)

PROJECTS

Improving Vector Space Model for search | *PyTorch, Git, Unix Shell* Jan 2023 - May 2023

- Developed a functioning search engine based on the Vector Space Model
- Improved it further using better representation of weights, Latent Semantic Analysis, and BM-25

RL Algorithms Implementation | *PyTorch, Git, Unix Shell* Jan 2023 - May 2023

- Implemented SARSA and Q-Learning on a custom grid world with **high** rewards in **less than 1000** episodes
- Implemented Deep Q-Networks, Actor-Critic, SMDPs and Intra-Option algorithms in OpenAI gym environment

AI algorithms Implementation | *Python* Jan 2024 - May 2024

- Developed and implemented key AI techniques including heuristic search in a Pacman gridworld, CSP solvers using MRV and MCV heuristics, and a resolution algorithm for automated inference

YouTube Clone App | *React, Material UI, RapidAPI* Nov 2023 - Dec 2023

- A fully responsive YouTube App with video categories, channel pages, video detail page, and player as well as related videos made using React, Material UI, and RapidAPI

Portfolio Website | *React, Material UI, EmailJS* Dec 2023 - Jan 2024

- Created a React app showcasing my technical skills and projects, with backend API to handle reach-out requests