AYUSH SHARMA

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EDUCATION

Boston University (*M.S. in Artificial Intelligence***)** | *GPA: 3.67* | *September 2023 – December 2024* **Boston, MA, USA**

- **Relevant Courses:** Graduate Level Directed Study (AI), Artificial Intelligence, Machine Learning, Deep Learning, Computer Vision, Data Science Tools and Applications, Natural Language Processing, Metrics and Evaluation in NLP.

Shri Mata Vaishno Devi University (*Bachelor of Technology in Computer Science***)** | *GPA: 8.43* | *August 2019 – May 2023* **India**

TECHNICAL SKILLS AND ACHIEVEMENTS

Technical Skills: Python, LangChain, OpenAI and Google Gemini API, MLOps, Generative AI, NumPy, Pandas, SQL, Matplotlib, Tensorflow, Keras, Scikit Learn, PyTorch, Java, C++, Fine Tuning, Prompt Engineering and Techniques, Git and Github

Certificates and Achievements: LangChain Certificate (Certificate Link), Stanford Deep Learning Specialization (Certificate Link), Finalist: Smart India Hackathon 2022, Mentor: SMVDU AI Circle and Code Club, Silver medal: Swimming Regionals

WORK EXPERIENCE

Schneider Electric **Bangalore, India**

Machine Learning Intern | *Certificate Link* *January 2023 – July 2023*

- Implemented automation for cleaning and validating over **750,000** data points across more than **15** columns, achieving migration to multiple cloud platforms in under **10 seconds** through NumPy and Pandas in Python.
- Leveraged Bi-LSTM model, word embeddings (GloVe, BERT) to classify incoming customer complaint and request tickets.

JP Morgan **Remote**

Software Engineer Virtual Experience Intern | *Certificate Link* *July 2022 – August 2022*

- Analyzed stock data feeds with Python, NumPy, and Matplotlib, and created a data visualization web page in React.js.
- Enhanced stock price prediction accuracy from **0.785** to **0.838** by applying RNN and LSTM models on analyzed data.

The Sparks Foundation **Remote**

Web Developer Intern | *Certificate Link* *August 2021 – September 2021*

- Created a dynamic, responsive frontend for a banking website in JavaScript, utilizing React.JS, HTML/CSS, and Flexbox.

RESEARCH WORK

Self-Improving Instructions and Programs for Visual Concept Learning using LLMs at a Human Level
Mao Mao**, Ayush Sharma**, Yuke Zhang, Madeleine Udell, Iddo Drori, In progress

Solving the International Mathematical Olympiad, Harvard's Mathematics PhD Qualification Exams, and MIT's EECS Curriculum using LLMs at a Human Level
Iddo Drori, Danielle Drori, Cindy Zhang, Ryan Nie, Chunhao Bi, **Ayush Sharma**, Uday Garg, Shreyas Sudarsan, Seunghwan Hyun, Bargav Jagatha, Akshat Gurbaxani, Abhaya Shukla, Nicholas Belsten, Ori Kerret, Avi Shporer, Madeleine Udell, In progress

ACADEMIC POSITIONS AND PROJECTS

Graduate Student Researcher at Boston University | *Advisor: Prof. Iddo Drori* *November 2023 – Present*

- *Conducting research on advancing LLMs towards human-level IQ in Visual Reasoning and Mathematical tasks.*

Graduate Teaching Assistant: Data Science Tools and Applications (CS 506) at Boston University *September 2024 – Present*

AI Research Paper and arXiv Assistant (End to End Deployed AI LLM App) | *Website Link* | *Github Link*

- **Tech Used:** Retrieval-augmented generation (RAG), LangChain, Google Gemini 1.5 Flash LLM, MLOps, Meta FAISS
- Built a Research Paper Assistant utilizing RAG, LangChain & Gemini 1.5 Flash in backend, FAISS for similarity search. Users can upload multiple documents or arXiv links and do research (ask questions) with accurate, context-aware responses.

Photo-realistic Video Generation using Diffusion Models (Research Project) | *Github Link* | *Research work paper link*

- **Tech Used:** Text to Image Diffusion Models, DDIM and DPM Samplers, Image Generation, Generative AI
- Enhanced the SOTA zero-shot text-guided video-to-video framework 'Rerender A Video' through dedicated research, focusing on improving the Frame Sampling and Selection by replacing the original Sampler and Key frame sampling method.

Debt Collection project for WGBH (B.U. client) (Team Lead) | *Github Link* | *Detailed Results Link*

- **Tech Used:** Data Science and Analysis, SQL, Python, Pandas, Matplotlib
- Examined **5,000+** debt cases from Massachusetts Court System Database over **10** years, uncovering **20%** rise in cases, **25%** more virtual proceedings during pandemic, **40%** capias warrants, **30%** wage garnishment, top 10 debt collectors.

Autonomous-Driving Car Detection | *Github Link*

- Built a car and object detection model in Python employing **Deep Convolutional Neural Networks**. Integrated the **YOLO algorithm** for object detection and **non-max suppression** & **Intersection over Union** techniques for anchor box reduction.