Charan Kumar

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Education

University of Southern California Los Angeles, CA, USA
Master of Science in Computer Science - Artificial Intelligence ***Aug 2024 – May 2026***
- **Relevant Coursework**: Foundations of Artificial Intelligence, Web Technologies, NLP, Machine Learning

SRM Institute of Science and Technology Chennai, TN, India
Bachelor of Technology in CSE with Specialization in AI and ML ***Sept 2020 – June 2024***
- **Relevant Coursework**: AI, Neural Networks, Computer Vision, Applied ML, Statistical ML, NLP, Robotics, Computer Netwoks, Data Structures

Technical Skills

Languages: Python, C++, HTML/CSS, SQL, C, R, JavaScript
Tools/Technologies: Android studio, Swift, Docker, REST APIs, AWS, Azure, Tableu, PowerBI, GCP, Node.js, React, Django, Flask, MySQL, MongoDB, Bash/Shell scripting, TensorFlow, PyTorch, Keras, Rasterio, OpenCV, NLP, GDAL, , spaCy, scikit-learn, XGBoost, Computer Vision, pandas, NumPy, Matplotlib, GeoPandas, seaborn, joblib, Deep Learning, Langchain, LangGraph, LLM, Autogen, RAG, CAD, ChatGPT, Claude, Deepseek, LlamaIndex, Hugging face.

Experience

AI Intern Apr 2024 – June 2024
CoEZET IIT Madras *Chennai, TN, India*
- **Developed a full-stack lab reservation application** with an integrated **LLM-powered** recommendation system for **500+** students and faculty, digitizing booking workflows for **10+** laboratories and reducing administrative labor by **75%**
- **Engineered an intuitive digital platform** to centralize real-time availability tracking, optimizing resource utilization and increasing student lab engagement by **50%** through **LLM-driven** personalized suggestions and automated confirmation systems
- **Led end-to-end implementation** including **LLM fine-tuning**, stakeholder requirement gathering, cross-functional testing, and user training, achieving **98%** adoption rate within the department **within first 3** deployment cycles

Academic Intern July 2023
NUS Advanced Computing for Executives *Singapore*
- Designed a **letter recognition framework utilizing neural networks** aimed at children's education; communicated clear objectives while coordinating efforts among team members, resulting in positive engagement from over **100 students** during testing sessions
- Led a team of **3** to build a letter recognition system using **neural networks and pattern recognition**, communicating project goals and coordinating efforts to enable kids to learn and practice the English alphabet
- Integrated **AWS** services, leveraging **EC2** instances for hosting, utilizing **AWS Hadoop** for data processing, and optimizing cloud-based deployment.
- Assessed an interactive letter recognition model with a team of **2**, leading data training and attaining **93% accuracy**, enhancing children's learning capabilities

Software Developer Intern Nov 2022 – Jan 2023
DSSI Solutions *Chennai, TN, India*
- Developed a high-performance **inmate monitoring system** in **C++ using OpenCV** that analyzed surveillance footage in real-time, reducing incident response times by **45%**
- Created a **secure access control module** with encrypted authentication, handling **1000+** daily transactions while generating detailed logs for compliance

Projects

Agent Decision-Making through Multimodal LLM-RAG Simulation [Research project] Jan 2025 - Present
- Currently developing a **novel multimodal RAG system** that retrieves relevant **GUI visualizations** based on textual action descriptions, targeting a **70% improvement in web agent decision** accuracy across **15+** diverse web interfaces
- Implementing an experimental **LLM-based trajectory** simulation framework that **generates 8-10 possible interaction paths** per task, projected to **reduce navigation errors by 45%** compared to traditional reactive agents

AI-Driven Financial News Sentiment Analyzer Jan 2025 - Feb 2025
- Processed **500,000** news articles with fine-tuned transformer models **(BERT, RoBERTa)**, achieving **92%** accuracy, **0.89 F1-score**, and 2-sec prediction times.
- Enhanced **stock movement prediction** accuracy by **12%** through sentiment-trend correlation and Conducted backtesting on **5** years of historical financial data, validating the system's predictions with a **10%** higher ROI compared to traditional rule-based models.

Game playing AI agent- Little GO Nov 2024 - Jan 2025
- Developed a **high-performing AI agent** that played the Little-Go game, leveraging the **Alpha-Beta pruning and NegaMax algorithms** to optimize decision-making.
- Achieved a **98% win rate**, outperforming advanced AI opponents trained with different strategies, demonstrating **superior search optimization techniques**