Karan Singh Garkel

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EDUCATION

Master of Science in Artificial Intelligence (CGPA: 3.97) September 2023 – December 2024
Northwestern University, Illinois, USA

Bachelor of Technology in Information Technology Engineering (Specialization: Data Science) July 2019 - July 2023
Manipal University Jaipur, Rajasthan, INDIA

SKILLS

Programming Languages: Python, JavaScript, C++, C, SQL
Libraries and Frameworks: Node.js, TensorFlow, PyTorch, Keras, NumPy, Pandas, Scikit-Learn, Matplotlib, Seaborn, OpenAI
Data Storage and Processing: MongoDB, MySQL, Databricks, Spark, AWS, Azure, GCP, GitHub
Data Visualization and Business Intelligence: Tableau, Power BI
Major Coursework: Data Science, Machine Learning, Big Data Analytics, Deep Learning, Natural Language Processing, Computer Vision, Data Mining, Data Visualization, Cloud Computing, Predictive Analysis, AI in Online Markets
Certifications: AWS Technical Professional, IBM Data Science Professional Certificate, IBM AI Engineering Professional Certificate, AI in Healthcare Specialization by Stanford

WORK EXPERIENCE

Data Science Intern, Live Nation Entertainment, Chicago, IL June 2024 – Present
- Developed an automated pipeline using key phrase extraction, sentiment analysis, and LLM summarization with prompt engineering, processing 500,000 comments from 151 venues and updating in real-time.
- Engineered 11 aspect-based dashboards delivering regular, data-driven updates with integrated satisfaction scores and summarized feedback to enhance venue performance and decision-making.
- Contributed to the design and development of a RAG-based LLM, incorporating historical data on fan feedback, financials, and artist performances, enabling stakeholders to query complex information for show planning and event management.

Northwestern University, Evanston, IL
Teaching Assistant, MSAI Program September 2024 – Present
- Served as a TA for the Machine Learning course, co-developing exercises and aiding students in applying AI concepts.
- Assisted with grading, feedback, and tutoring to uphold evaluation standards and boost performance.

Research Assistant, Feinberg School of Medicine March 2024 – June 2024
- Developed an LLM-based system using the LLama3-Gradient model for summarizing clinical notes in radiation oncology, employing OCR, NER, and regex for HIPAA-compliant text extraction from scanned reports.
- Optimised prompts and evaluated summaries, achieving an 80% BERTScore, verified through manual review.
- Integrated final summaries into Rad Onc Tables application, enhancing usability for healthcare providers.
- Reduced note creation time, minimized errors, and improved provider communication, resulting in better patient outcomes.

Research Assistant, CASMI Lab February 2024 – June 2024
- Conducted research to advance detection of Retinal Ischemic Perivascular Lesions (RIPLs) in OCT scans.
- Implemented a hybrid model for segmentation and classification using ResNet-18, improving F1 score to 81%.

SDE Intern, AICTE, Ministry of Education, Delhi, India January 2023 – May 2023
- Created the "ANUVADINI" translation platform supporting 22 Indian and foreign languages, integrating speech-to-speech, text-to-voice, and voice-to-text functionalities, OCR for image translation, and optimizing document translation modules.
- Managed a team of 4 linguistic interns, boosting translation accuracy by 15%.
- Deployed the platform on Azure, cutting down translation time by 12% and increasing operational efficiency.

PROJECT EXPERIENCE

The Dugout: Predicting Event Outcomes with Commentary (Northwestern University). April 2024 - June 2024
Developed a comprehensive commentary analysis system with three modules: a RoBERTa model and a spaCy-based NER model for predicting the scoring pattern of the game, and a PEGASUS model for summarizing key statistics. Achieved 72% accuracy in outcome predictions, with summarization quality assessed through manual evaluation.

User Recommendation & Classification based on Personality (Northwestern University) October 2023 - December 2023
Engineered and deployed an MBTI based personality prediction model using synthetic data, ensuring balanced target class distribution in 60,000 rows. Improved model with random forest feature engineering and reducing the questionnaire by 67%.

Generative AI-Enhanced Medical Document Search System (Independent Project) July 2023 - August 2023
Built a medical document search system tailored for medical reports, leveraging PyPDF for text extraction, Sentence Transformers for text embeddings, and integrating Llama2 with Retrieval-Augmented Generation (RAG) for advanced query processing. Optimized document retrieval for dermatology report analysis and research purposes.

EXTRACURRICULAR ACTIVITIES & COMMUNITY WORK

- **Peer Mentor** for Intro to AI and HCI course at McCormick School of Engineering, Northwestern University.
- Coordinated COVID relief efforts with **DekhRekh NGO**, organizing plasma donations and meals.
- **Karate Accolades**: NCR Bronze (2015), State Gold (2014), All India Silver (2011), and a certified blue belt