Nikhil Pavan Kanaka

⚲ npkanaka.github.io   ✉ nikhilpavan.kanaka@gmail.com   ⧉ github.com/npkanaka

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ABOUT ME

ML/NLP Engineer with expertise in developing and scaling foundational models across language, speech, and multimodal domains. Experienced in applying state-of-the-art AI research to design scalable, production-ready solutions and leading cross-disciplinary teams.

EDUCATION

Ohio State University

MS by thesis in Computer Science (NLP)   Jan 2023 - Dec 2024

- Advisors: *Dr. Sachin Kumar, Dr. Rajiv Ramnath*
- Related Coursework: *Speech and Language Processing, High Performance Deep Learning, Advanced Computer Architecture, Fairness and Security in AI, Advanced Algorithms, Research methods*

GRIET

Bachelor of Technology in Computer Science and Engineering, CGPA: 9.39/10   Oct 2020

- Related Coursework: *Artificial Intelligence, Neural Networks, Design and Analysis of Algorithms*

INDUSTRIAL EXPERIENCE

Enterprise Data Analytics

Data Science Intern   Jan 2024 – Dec 2024

Led a data migration project, improving data processing efficiency by 84.4%, reducing processing time from 6 hours to 56 minutes through AWS Airflow (MWAA) parallel loading and ConnectorX. Enhanced backend systems and data pipelines to scale processing capacity by 4.5 times.

Wexner Medical Center

Research Intern   May 2023 – Aug 2023

Spearheaded data validation initiatives, reducing validation time by 96%. Deployed NLP solutions to analyze 250K+ feedback entries, enhancing program effectiveness and patient care satisfaction. Streamlined schema migration processes, reducing system downtime by 87%.

Ninjacart

Senior Software Engineer   Jun 2022 – Dec 2022

Led backend development for a B2B platform, utilizing Java Spring Boot, NodeJS, MongoDB, Kafka, and Apicurio Registry to enhance API consistency and microservice interoperability, achieving a 28% increase in transaction volume and improved transaction efficiency.

Head Digital Works

Software Development Engineer   Feb 2020 - Jun 2022

Led the design, development, and deployment of backend systems supporting over 80 million users, ensuring scalability and high availability. Leveraged AWS cloud, messaging systems, and machine learning to support business growth and improve user engagement with predictive analytics.

ACADEMIC PROJECTS

Comparative Investigation of Grokking: A Study on Reasoning, *Mentor: Dr. Sachin Kumar, OSU*
Improving LLM reasoning by investigating parametric memory.[info] *(under review)*

911AIPredict, *Mentor: Dr. Rajiv Ramnath, OSU*
Support system for 911 services. Fine-tuned LLMs and a RAG framework integrating vector databases and knowledge graphs, elevating medical assessment accuracy, optimizing unit deployment. [info]

Voicequity, *Mentor: Dr. Srinivasan Parthasarathy, OSU*
Advanced ASR fairness by creating a novel metamorphic testing framework to expose and address bias, driving robust and inclusive voice recognition solutions for global demographics. [report]

Long-Answer Question, *Mentor: Dr. Chris Brew, OSU*
Developed a pipeline using LongFormer attention and generation models to create long-answer questions from academic texts, achieving high semantic accuracy through evaluation. [report]

HiDL, *Mentor: Dr. DK Panda, OSU*
- Engineering JAVA Bindings for MVAPICH and advancing GPU-accelerated workflows within NVIDIA's Spark-Rapids, GDS, and DALI to set new benchmarks in HPC+AI. [info]
- Investigating GPU Offloading in NVIDIA Rapids. [report]

LogiChain, *OSU*
Augments LLMs with symbolic solvers to enhance deductive reasoning by translating natural language into symbolic logic. Performance gain was up to 30% over LLM-based approaches. [code]

Benchmarking of File Systems, *Mentor: Dr. Ting Zhu, OSU*
Performance Benchmarking of File Systems for handling massive data workloads. [report]

ProdReview, *Amazon Research*
E-commerce review analysis platform with sentiment intelligence and a novel graph-based summarization for actionable, product-specific insights. [info]

SERVICE
- Founding member of the Advanced Academic Center at GRIET, for academic research. [link]
- Technical Head for Spirals, the Language and Literature club of GRIET. [link]
- Tech mentor at Sahaya Society, fostering skill development for the less privileged. [link]

TALKS
Domain-Specific Fine-Tuning   2023
Advancing Analytics in Medical Research at Wexner Medical Center

Unlocking Meaning   2022
NLP's Role in Shaping the Future of Intelligent Systems

Quantum Perspectives on Intelligence   2020
How quantum reshapes our understanding of intelligence, new possibilities for AI

Bridging Minds and Machines   2020
Psychological Impact of AI Evolution