Dilip Venkatesh

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EDUCATION

NYU Courant
MS, Computer Science 2026
Advisor: Yann LeCun
GPA: 4.0
Relevant Courses: NLP, Emerging Topics in NLP, Operating Systems

Birla Institute of Technology and Science, Pilani
B.E., Computer Science and Engineering, 2024

PROJECTS

Mechanistic Interpretability of Multimodal models: Mechanistically interpreting a Large Vision Language model to analyze and steer the Llava multimodal LLM behavior.

GPT-4 Multimodal for medical image analysis: Utilized GPT-4V multimodal model to classify the severity of diabetic retinopathy (0-4) and generated detailed diagnostic reports

Fine-tuning LLMs for sentiment analysis: Fine-tuned IndicBERT v2 model for sentiment analysis in Tamil using Hugging Face, achieving an F1 score of 0.85 on the test set.

Machine Learning for Probability of success of a startup: Employed Bayesian networks to analyze and predict the probability of startup success, enhancing decision-making processes and investment strategies, and identify critical aspects for the success of a startup.

Database systems - Recursive DNS resolver: Engineered a recursive DNS resolver comprising a root server, TLD, and ANS to retrieve IP addresses from domain names, integrating SQL, Python, and HTML/Bootstrap for robust functionality.

Machine learning in medical research: Implemented machine learning and deep learning techniques for the analysis and diagnosis of diabetic retinopathy, utilizing the Relief algorithm for feature selection on the DR dataset. Employed U-Nets for semantic segmentation of retinal images, enhancing the accuracy and precision of medical image analysis. Developed the project using PyTorch and Julia (Flux framework),

PUBLICATIONS

Cross-Lingual Auto Evaluation for Assessing Multilingual LLMs: Developed the Cross Lingual Auto Evaluation (CIA) Suite, an innovative framework for multilingual NLP evaluation, including Hercule (a cross-lingual evaluator LLM) and Recon (a novel test set with 500 human-annotated instructions across 6 languages). Accepted ACL 2025 Main Conference.

BITS Pilani at SemEval-2024 Task 10: Fine-tuning BERT and Llama 2 for Emotion Recognition in Conversation: Fine-tuned LLaMA2 and BERT models on a Hindi language dataset for sentiment analysis using PyTorch, Hugging Face's Transformers, Datasets, and Evaluate libraries; achieved a maximum weighted F1 score of 0.42. Published in SemEval at NAACL 2024.

BITS Pilani at SemEval-2024 Task 9: Prompt Engineering with GPT-4 for Solving Brainteasers: Leveraged OpenAI's GPT-4 Turbo API for prompt engineering, addressing brain teasers to test the reasonability of language models. Published in SemEval at NAACL 2024.

BITS Pilani at SemEval-2024 Task 1: Using text-embedding-3-large and LaBSE embeddings for Semantic Textual Relatedness: Obtained sentence embeddings using sentence-transformers/LaBSE and OpenAI text-embedding-large, for identifiying semantic textual relatedness analysis across nine regional languages globally. Published in SemEval at NAACL 2024.

SKILLS

Technical Proficiency : Python, PyTorch, HuggingFace, Julia, C++, Java, Flux.jl, SQL, Git/Github, Pandas, numpy, sckit-learn, Git/Github, LaTeX.
Subjects / Electives: Natural Language Processing, Operating Systems, Design and Analysis of Algorithms, Data Structures and Algorithms, Database Systems

EXPERIENCE

Researcher **AI4Bharat**
August 2024 - December 2024 IIT Madras
- Working on creating a cross lingual evaluator LLM for multilingual NLP under Prof. Anoop Kunchukuttan and Prof. Raj Dabre

Software Development Intern **BlokTrek Technologies Pvt Ltd**
July 2023 - December 2023 Banglore
- Developed and maintained backend REST APIs using Python, ensuring robust and scalable integration for core company operations.
- Engineered high-quality, production-level Python code for critical functionalities, including pricing, payments, subscription management, and tear sheets, contributing to the company's operational efficiency and service reliability.
- Implemented a Named Entity Recognition (NER) system utilizing Azure OpenAI NER API and spaCy, enhancing the company's data processing and analytics capabilities.
- Crafted and managed backend Python code for CRUD operations on MongoDB, streamlining database interactions and data management processes.
- Leveraged AWS technologies, including Lambda, S3, DocumentDB, and EC2, to build, deploy, and manage scalable, secure, and cost-efficient applications, driving the company's cloud-based solutions and infrastructure.

Intern **APS Lifetech**
May 2022 - July 2022 Remote
Worked in the web development team, utilizing Python for backend development and HTML/Bootstrap for frontend design, contributing to the creation of responsive and functional web applications.