YUSUF BAIG

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EDUCATION

New York University (Courant Institute of Mathematical Sciences), New York City, NY — May 2026
Master of Science in Computer Science
Coursework: Operating system, Machine Learning, NLP, Language Vision Models, Algorithms

Manipal Institute of Technology, Udupi, India — May 2022
Bachelor of Technology in Information and Technology, Minor in Computational Intelligence
Coursework: Linear Algebra, Data Structures, Statistics, Machine Learning, Computer Vision

SKILLS

Languages	Python, C++/C, C#, MATLAB, SQL, Java, HTML, CSS, LaTeX, Racket
ML Frameworks	PyTorch, HuggingFace, pandas, LangChain, NumPy, scikit-learn, seaborn, matplotlib
Frameworks	HPC, Git, GitHub, Docker, Flask, Jira, BitBucket, .NET, MongoDB, AWS, Linux

EXPERIENCE

IIIT Delhi — **Delhi, India | February 2022 – August 2024**
Research Assistant – Legal AI — Advisor: Dr. Jessy Li, Dr. Rajiv Ratn Shah

- Implemented GNNs for Legal Judgment Prediction, leveraging node classification techniques with advanced XLNet-based embeddings to model judicial case structures, achieving a macro F1 score of 75%.
- Developed and evaluated zero-shot Legal Judgment Prediction methods using Llama, Mistral, and Phi leveraging techniques such as Chain of Thought and metadata integration to simulate judicial reasoning processes, achieving a 10% improvement in F1 score compared to traditional approaches.

Carl Zeiss R&D — **Bangalore, India | January 2022 – June 2024**
Applied Scientist – Image Processing and Backend — Supervisor: Dr. Daniel Weiss

- Developed advanced Computed Tomography (CT) image processing Python packages from scratch for aerospace clients, specializing in calculating 3D volume Contrast Discrimination Function and Modulation Transfer Function to enhance imaging precision.
- Engineered and optimized complex algorithms for pixel intensity adjustments, streamlining workflows and reducing processing time by 33% (saving 10 hours in a 30-hour project timeframe) during the image processing phase.
- Experienced in building scalable Client-Server Applications utilizing gRPC and Windows Communication Framework (WPF), enabling efficient and high-performance communication between distributed systems.

Samsung R&D — **Udupi, India | August 2021 – December 2021**
Research Intern - Prism Project: Natural Language Processing

- Developed a Multilingual Word Sense Disambiguation system by enhancing the Lesk algorithm, improving accuracy across three languages, and created an open Python package for transliteration, spell correction, POS tagging, and word sense disambiguation of Hindi text for code-mixed text.

PUBLICATIONS

Zero-shot Legal Judgment Prediction: How ready are LLMs on legalese? *[UNDER REVIEW]*

Exploring Graph Neural Networks for Indian Legal Judgment Prediction *arXiv 2023*

HindiWSD: A package for word sense disambiguation in Hinglish & Hindi *ACL WILDRE 2022*

Severity Classification of Mental Health-Related Tweets *IEEE 2021, ICML CA2MH 2021*

Curb Your Carbon Emissions: Benchmarking Carbon Emissions in Machine Translation *arXiv 2021*

Assessing the Carbon Intensity of Models Across Different Languages *ICML WiML 2021*

PROJECTS

Development of the MAPLE Score for Evaluating LLMs in Mathematical Reasoning

- Designed the MAPLE score, a holistic metric to assess reasoning misalignment in LLMs by integrating error rates, redundancy, and validity.
- Developed a multi-stage evaluation framework to identify reasoning pitfalls and improve LLM performance on complex mathematical tasks.

TEACHING EXPERIENCE

CSCI-UA 381 Programming Tools for the Data Scientist — January 2025 - Present

- Assisting Dr. Hasan Aljabbouli with mentoring and grading for the undergraduate course Programming Tools for the Data Scientist Spring 2025 semester at New York University.