AYUSHI NIRMAL

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EDUCATION

Master of Science in Computer Science with **Thesis** — May 2024
Arizona State University (ASU), Tempe, AZ — **GPA**: 3.87/4

Bachelor of Technology in Electronics and Communications with **Honors** — May 2019
Indian Institute of Information Technology, Allahabad — **GPA**:8.83/10

TECHNICAL SKILLS

Programming Languages: Python, Java, C++, R, MATLAB, JavaScript.
Machine Learning & AI: Generative AI, LLM Fine-tuning, NLP, Information Retrieval, Intent Classification, Data Mining, Entity Recognition, Ranking Algorithms, Distributed Data Processing, LangChain, LlamaIndex, Hugging Face.
Data Analysis & Frameworks: Pandas, NumPy, PyTorch, Spark, Hadoop MapReduce, Hive, Impala, NetworkX, RAG, OpenAPI, Microservices, Spring Boot, MVC, Hibernate.
Tools & Platforms: Kubernetes, Docker, AWS, Postman, Git, Bitbucket, SQL, MongoDB.

EXPERIENCE

Bear River Associates, Oakland, CA, USA: *AI Developer* — June 2024 – Present

- Developed an AI-driven **Retrieval-Augmented Generation** (RAG) system by integrating OpenAI's **GPT-4**, **Langchain**, **OpenAPI documentation** and **SQLDatabase** agent to **streamline customer support** for last-mile package delivery. This system reduced customer response time by **40%**, improving customer satisfaction.
- Enhanced **OCR detection** efficiency by integrating AI/ML models (**Fast R-CNN**, **YOLOv8**) with **Layout Parser** and **Tesseract Engine**, boosting data extraction accuracy to **85%** and reducing processing time to **2 seconds**. This in-house solution saved company **$100K** annually by eliminating the need for third-party vendors, contributing to a **15% increase** in overall **operational efficiency** and **revenue.**
- Engineered a high-performance **Slack Bot notification** system to deliver **real-time**, **conversational** delivery **updates** to end customers with **100 ms** latency, **reducing** customer support **queries** by 30%. **Streamlined** communication channels, ensuring **smooth delivery tracking** and boosting customer satisfaction by 15%.

DMML, ASU, Tempe, USA: *Graduate Research Assistant* — August 2023 – December 2023

- Evaluated **ideological bias** in **political content** using **SVM**, **Logistic Regression, CNN**, and **BERT** on tweets from **Left**, **Right**, and **Neutral** sources, revealing a **28%** accuracy **drop across spectrums,** emphasizing need for robust debiasing in NLP.
- Analyzed Covid-19 vaccine biases by crawling 500+ tweets using **Tweepy**, **Pandas**, and **NetworkX**, revealing smaller, **dispersed clusters for true information** versus rapid, **large-scale propagation of disinformation**, highlighting critical social media dynamics in **bias amplification.**

Citicorp Services India Pvt. Ltd., Pune, India: *AssociateSoftware Developer* — July 2019 – July 2022

- Lead backend developer of **Simpliciti** platform created using **Kafka**, enabling generation of Counterparty Risks and streamlined CVA/B3 numbers at a high rate of **0.29 trades/second** for Market team's Credit Value Risk Assessment.
- Revamped system latency and stability by implementing **RESTful APIs** and **microservices** using **Spring Boot**, increasing throughput by **12x** while improving risk analysis accuracy by **10%** and seamlessly delivering results to mobile teams.
- Collaborated with cross functional DevOps team for scalable Docker-based pipeline deployment and maintenance, resulting in a **20% reduction** in deployment time and a **30% increase** in system reliability.

PUBLICATIONS AND CONFERENCES

- **"Towards Interpretable Hate Speech Detection using Large Language Model-extracted Rationales" [WOAH (NAACL), 2024]:** Developed an interpretable hate speech detector, SHIELD using LLM-extracted rationales crucial for transparent content moderation enhancing transparency and retaining performance across multiple benchmark datasets with minimal accuracy trade-off. *{https://arxiv.org/abs/2403.12403}*
- **"User migration across multiple social media platforms" [SDM, 2024]:** Analyzed user migration across social media platforms post-Twitter's policy shift, revealing platform-specific user behaviors and challenges, enhancing understanding of social media dynamics *{arXiv:2309.12613}*
- **"Disinformation detection: An evolving challenge in the age of llms" [SDM, 2024]:** Enhanced LLM-generated disinformation detection accuracy by 62.5% using advanced prompts, addressing critical detection failures and bias issues in existing models. *{arXiv:2309.15847}*
- **"SocioHub: An Interactive Tool for Cross-Platform Social Media Data Collection" [SBP-BRiMS, 2023]:** Developed SocioHub to analyze cross-platform user behavior, enhancing insights by 40%, fostering better communication strategies and user experience across Twitter, Instagram, and Mastodon. *{arXiv:2309.06525}*

RELEVANT PROJECTS

- **Monte Carlo Tree Search (MCTS) on Pacman**: Implemented an optimized MCTS algorithm, outperforming Expectimax and Alpha-Beta agents in terms of time and space efficiency. Achieved superior scalability in large state spaces, demonstrating up to 50% faster performance and resource optimization.

AWARDS AND ACCOMPLISHMENT

Copper Award: Recognized for contributions to **Internal Audit team**, driving a remarkable **10x** increase in throughput.
Gold Award: Reward from **Simpliciti** team for outstanding delivery of **EMM products** into production.