

# KANISHK YADAV

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## EDUCATION

Birla Institute of Technology and Science, Pilani

Hyderabad, India

B.E. Computer Science & M.Sc. Chemistry | CGPA: 8.63/10

Aug 2019 – Jul 2024

**Relevant Coursework:** Machine Learning, Computer Vision, Natural Language Processing, Linear Algebra, Probability & Statistics, Data Structures & Algorithms, Operating Systems, Networks, Database Systems, Object-Oriented Programming

## RESEARCH EXPERIENCE

Nanyang Technological University

Singapore

Undergraduate Researcher | Advisor: Prof. Chng Eng Siong [\[Code\]](#) [\[Thesis\]](#)

Jan 2024 – Jul 2024

- Achieved 87% accuracy and a **33% improvement in F1-score for speaker counting** on the DIHARD III dataset by engineering a sequential fine-tuning pipeline using **WavLM** to resolve class imbalance
- Benchmarked performance-latency trade-offs in Pyannote **Voice Activity Detection** for real-time streaming applications

University of Toronto

Toronto, Canada

Mitacs Globalink Scholar | Advisor: Prof. Oleksandr Voznyy [\[Code\]](#) [\[Thesis\]](#) [\[Publication\]](#)

Jul 2023 – Dec 2023

- Architected an ML testbed for **band gap prediction** to capture materials properties from discrete atomic encodings
- Designed **shared-weight Siamese-like models** with permutation invariance, eliminating positional bias outliers
- Validated robustness in extreme low-data (1% **train** split) regimes by scaling from 5-atom to complex 60-atom tasks

## WORK EXPERIENCE

Walmart Global Tech

Bengaluru, India

Software Development Engineer II | Sam's Club

Aug 2024 – Present

- Engineered high-throughput ingestion pipelines for tracking updates, processing 500,000+ daily events across 18,000+ zip codes
- Replaced cron-based polling with event-driven **webhooks** for real-time tracking of **>95%** of Walmart's traffic
- Modernized the global shipment tracking lifecycle, transitioning systems from **monolith to scalable microservices**
- Spearheaded **cloud cost-optimization** in Azure and Kafka resources across 11 teams, delivering \$2M in annual savings

Walmart Global Tech

Bengaluru, India

Software Engineer Intern | Sam's Club

May 2023 – Jul 2023

- Engineered an **automated NLP pipeline** using TF-IDF and Support Vector Machines (OvR) to map carrier milestones, reducing mapping errors by **85%** and eliminating manual workflows
- Designed a web interface for Sam's Club to visualize global shipment lifecycles by querying records from Azure Cosmos

Bharat Electronics Limited

Bengaluru, India

Deep Learning Intern [\[Report\]](#)

May 2021 – Jul 2021

- Trained **YOLOv5** for Indian Coast Guard to automate surveillance of **7,500 km** of coastline, achieving **0.86 mAP@0.5**
- Deployed to detect 9 maritime classes, with **4x faster convergence** through tuning; analyzed OOD gaps in field tests

## PUBLICATIONS

Wang Z, Davis A, Dutta R, **Yadav K**, Neporozhnii I, Voznyy O. *How the Discreteness of the Periodic Table Undermines Machine Learning Predictions*. ChemRxiv. 2025; doi:10.26434/chemrxiv-2025-vj4fk (Under Review at **Digital Discovery**)

## AWARDS & CERTIFICATIONS

- Mitacs Globalink Scholarship:** Awarded **9,200 CAD** for funded research at UofT; selected from a pool of **17,000+** applicants globally for strong research potential
- Bravo Award, Walmart:** Received organization-wide recognition for delivering critical **architectural improvements**
- Winter School on Deep Learning, 2024:** Selected for an 8-week workshop at the **Indian Statistical Institute** covering advanced topics in GenAI and LLMs; attended seminars by Sanjeev Arora, Sergey Levine, and Ruslan Salakhutdinov

## SELECTED PROJECTS

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**ErrorCortex: RAG-Powered Error Intelligence** [\[Code\]](#) Oct 2024 – Present

- Architected an **agentic SDK** to intercept and offload runtime exceptions via RabbitMQ for **RAG**-based reasoning
- Synthesized code patches using Llama-3 grounded by heuristic context; enforced syntactic validity via **AST**
- Engineered a **self-improving feedback loop**, re-indexing validated fixes into **ChromaDB** to refine future predictions

**Conversational AI Chatbot** | *Chubb Insurance* [\[Report\]](#) Jan 2023 – Jun 2023

- Developed a chatbot handling both FAQ and transactional queries by building and querying a **Neo4j Knowledge Graph**
- Engineered **few-shot** intent classification using **SetFit** and **SBERT** semantic fallback for high accuracy with limited data
- Presented the solution design and proof-of-concept demo to Mohan Narayanaswamy, **CEO of Chubb India**

**Part-Of-Speech Tagger for Hindi-English Code-Mixed Data** | *NLP Course Project* [\[Code\]](#) Oct 2022 – Dec 2022

- Developed a hybrid POS tagger for code-mixed tweets by integrating **NLTK** with an in-house **Hidden Markov Model**
- Implemented the **Viterbi** algorithm and **Bigram** probability models **from scratch** to decode optimal tag sequences
- Built a preprocessing pipeline to clean noisy social media text and normalize mixed scripts via **Indic transliteration**

## TECHNICAL SKILLS & INTERESTS

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**Languages:** Python, Java, C++, C, SQL, ~~TeX~~

**Machine Learning:** PyTorch, TensorFlow, LangChain, OpenCV, NumPy, Pandas, W&B

**Systems & Cloud:** Docker, Kubernetes, Kafka, Elasticsearch, Azure Cosmos DB, Splunk, Grafana, Prometheus, Git, Swagger, Postman

**Research Interests:** Intelligent Large-scale Systems, Applied Machine Learning, Natural Language Processing

## LEADERSHIP & VOLUNTEERING

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**Team Leader**, *Alumni Mentorship Program, BITSAA International* Aug 2024 – Present  
Launched a platform connecting 300+ alumni mentors with undergraduate mentees to facilitate career guidance and professional development

**Student-Faculty Committee**, *Department of Chemistry, BITS Pilani* Jan 2021 – Jul 2022  
One of 4 faculty-chosen representatives to liaison between students and faculty, streamlining the transition to online instruction during the COVID-19 pandemic

**Head**, *Department of Photography, BITS Pilani* Jun 2021 – Jun 2022  
Managed a 60-member team of professional photographers for campus-wide event media coverage, from technical conferences and seminars to cultural festivals