

Nischal Ashok Kumar

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SUMMARY

Machine Learning and NLP researcher working on controlled generation, user modeling, and personalization. Skilled in LLM prompting, fine-tuning, and alignment (RLHF/DPO/GRPO), with experience in user-focused NLP research.

EDUCATION

University of Massachusetts (UMass), Amherst

Doctor of Philosophy (MS-PhD), Computer Science

Sept 2022 - Aug 2027 (Expected)

GPA: 4.0/4.0

Indian Institute of Technology (IIT), Patna

Bachelor of Technology (B.Tech), Computer Science and Engineering

July 2018 - May 2022

CGPA: 9.38/10, Institute Rank: 3/265

EXPERIENCE

Research Assistant, CICS UMass

Advisor: • Prof. Andrew Lan

Amherst, MA, USA

Sept 2022 - Present

• **Project: ML and NLP for Educational Applications**

• Tailoring LLMs for providing effective creative writing feedback using Reinforcement Learning - DPO/ GRPO.

• Worked on projects including personalization in long-form stories, math word problems, and generating pedagogical questions using both prompting and fine-tuning LLMs.

Applied Scientist II Intern, Amazon Web Services

Mentors: • Peng Shi • Lin Pan • Zhiguo Wang

New York City, USA

June 2024 - Sept 2024

• **Project: Multi-Document Query Aware Table Generation**

• Studied the task of generating tables given a query and a corpus of news articles. Proposed an automatic pipeline to extend any table dataset to query, article pairs grounded in the ChartQA dataset and benchmarked different RAG techniques.

Applied Scientist II Intern, Amazon Web Services

Mentors: • Marvin Dong • Jiarong Jiang • Zhiguo Wang

New York City, USA

June 2023 - Sept 2023

• **Project: Towards Practical Conversational Text-to-SQL systems**

• Identified 5 ambiguous and 4 unanswerable categories of user questions in conversational Text-to-SQL systems. Proposed an automatic data generation pipeline and benchmarked the dataset with SOTA LLMs.

Research Scientist Intern, SciSpace

Advisor: • Dr. Tirthankar Ghosal

Bangalore, India

May 2022 - August 2022

• **Project: Multimedia (Slides and Poster) Generation from Scientific Articles**

• Built an end-to-end service for creating long, medium, and elevator-pitch slides with posters for over 2M scientific articles

Undergraduate Researcher, AI-NLP-ML Lab

Advisor: • Prof. Asif Ekbal

IIT-Patna, India

July 2019 - May 2022

• **Undergraduate Thesis: Explainable Multi-Modal Novelty and Emotion based Fake News Detection**

• Proposed a novel contrastive learning approach using novelty and emotion for multimodal fake news with retrieved background knowledge, which gives 7% improvement over the previous state-of-the-art (SOTA).

• Proposed a novel multi-tasking neural network architecture giving SOTA results on 4 datasets (ByteDance, FNC, Covid-Stance, and FNID with 7.73%, 3.69%, 7.95%, and 13.38% improvement) which has been integrated with Wipro Research

Summer Research Intern, IBM Research AI

Research Managers: • Nitin Gupta • Hima Patel

Bangalore, India

May 2021-Aug-2021

• **Project: Detecting Ambiguity in Input-Output Annotations for Programming By Example (PBE) Systems**

• Identified five ambiguous properties that hinder the generalization of data transformation programs and proposed an interpretable multi-task neural network architecture for detecting ambiguity.

Undergraduate Researcher, DKE Group

Advisors: • Dr. Terry Ruas • Prof. Dr. Bela Gipp

University of Wuppertal, Germany

Dec 2020-May 2021

• **Project: Analysis of Transfer Learning Approaches for detecting Covid-19 Fake News**

• Performed masked-language-modeling (MLM) based pre-training of general neural language models (BERT, RoBERTa, DeBERTa, etc.) on Covid-19 corpus, CORD-19. Showed empirically that tokenizers and models tailored to the CORD-19 corpus do not provide a significant advantage over general-purpose ones.

AI Research Intern, Video Analytics Laboratory

Advisor: • Prof. Venkatesh Babu

Indian Institute of Science, Bangalore, India

May 2020-Aug 2020

• **Project: Unlabeled Data from Different Distribution for Adversarial Robustness**

• Constructed new loss functions combining Cross-Entropy and KL Divergence. Performed domain adaptation using Data-Enriching GANs between Cifar-100 and Cifar-10 datasets. Showed that unlabeled data from a different distribution is as competitive as the fully-supervised setting (within 2% error margin) against iterative FGSM and PGD-20 attacks.

SELECTED PUBLICATIONS

* denotes equal contribution

- **N Ashok Kumar***, M Dong*, Y Hu, et al. "PRACTIQ: A Practical Conversational text-to-SQL dataset with Ambiguous and Unanswerable Queries", NAACL 2025 Main Conference [[Paper](#)]
- **N Ashok Kumar**, W Feng, J Lee, H McNichols, A Ghosh, A Lan, "A Conceptual Model for End-to-End Causal Discovery in Knowledge Tracing", 16th International Conference on Educational Data Mining (EDM 2022) [[Paper](#)] [[Code](#)]
- **N Ashok Kumar**, A Lan, "Improving Socratic Question Generation using Data Augmentation and Preference Optimization", 19th BEA Workshop at NAACL-2024. [[Paper](#)] [[Code](#)]
- **N Ashok Kumar**, A Lan, "Using Large Language Models for Student Code Guided Test Case Generation for Computer Science Education", AI4ED Workshop at AAAI-2024 [*Best Runner-Up Paper*] [[Paper](#)] [[Code](#)]
- **N Ashok Kumar**, N Fernandez, Z Wang, A Lan, "Improving Reading Comprehension Question Generation with Data Augmentation and Over-generate-and-rank", 18th BEA Workshop at ACL-2023 [*Outstanding Paper*][[Paper](#)] [[Code](#)]
- **N Ashok***, R Kumari*, T Ghosal and A Ekbal, "A Multi-task Learning Approach for Fake News Detection: Novelty, Emotion, and Sentiment Lend a Helping Hand", International Joint Conference on Neural Networks, [[Paper](#)] [[Code](#)]
- **N Ashok***, JP Wahle*, T Ruas, N Meuschke, T Ghosal and B Gipp, "Testing the Generalization of Neural Language Models for Covid-19 Misinformation Detection", iConference 2022 [[Paper](#)] [[Code](#)]
- V Gupta, R Kumari, **N Ashok**, T Ghosal and A Ekbal, "MMM: An Emotion and Novelty-aware Approach for Multilingual Multimodal Misinformation Detection", Findings of the AACL-IJCNLP 2022 [[Paper](#)] [[Code](#)]

Pre-prints

- **N Ashok Kumar***, C.M. Pham, M. Iyyer, A. Lan "Whose story is it? Personalizing story generation by inferring author styles" [Under Review ACL ARR] [[Paper](#)] [[Code](#)]
- **N Ashok Kumar***, M.C. Peczuh*, R. Baker, et al., "Toward LLM-Supported Automated Assessment of Critical Thinking Subskills" [Under Review LAK 2026] [[Paper](#)]

AWARDS and HONORS

- UMass Victor Lesser Scholarship in Artificial Intelligence, 2023 - Awarded to a top Ph.D. student specializing in AI.
- UMass Common Good Fellowship, 2023 - Awarded for conducting research in AI for Education.
- UMass CICS Doctoral Scholarship, 2022 - Awarded Entry scholarship (\$4,000) among Fall 2022 admits.
- IIT Patna B.Tech Merit List, 2022 - Ranked 3rd in the graduating class of 265 students.
- IIT Patna Best CSE Undergraduate Thesis Nomination, 2022 - Nominated for my research on fake news detection.
- Indian Academy of Sciences Research Fellow, 2020 - Awarded for conducting AI research internship at IISc Bangalore.
- Govt. of India KVPY Fellowship, 2016 - Ranked in the top 0.2% of 200,000 students nationwide for pursuing research.
- Academic Excellence Award, 2016 - Ranked 2nd among 30,000 students in the ICSE 10th Standard exam.

SERVICE AND LEADERSHIP

- **Ph.D. Mentor** — Mentored M.S. students through the CS696DS Industry Mentorship Program (with Meta) and undergraduate researchers via URV (2023–present).
- **Program Committee Member** — BEA Workshop at ACL 2023, NAACL 2024, and AI4ED Workshop at AAAI 2024, 2025.
- **Volunteer** — Ph.D. Application Support Program (PASP), and New Student Committee, UMass CICS.
- **Head of ML and AI**, NJACK (CS Club, IIT Patna) — Introduced the NJACK ML Workshop Series.
- **Departmental Lead**, DSC IIT Patna — Facilitated the Explore-ML Workshop Series powered by Google AI.
- **Teaching and Writing** — Conducted ML/AI teaching sessions [Talks] and authored technical blogs [Blog] on ML and AI.
- **Lead**, Entrepreneurship Cell, IIT Patna — Introduced the Entrepreneur-101 Series and organized talks on entrepreneurship.
- **Social Worker**, National Service Scheme (IIT Patna) — Led the rural entrepreneurship division.

SKILLS

- **Programming Languages**: Python, C/C++, Java, Bash
- **ML & NLP Frameworks**: PyTorch, HuggingFace Transformers, vLLM, SGLang, LangChain, OpenAI API
- **LLM Development**: Prompt design, Fine-tuning (LoRA, PEFT), Preference optimization (RLHF, DPO, GRPO), LLM-as-a-judge, Human–LLM evaluation and analysis
- **Data & Experimentation**: Pandas, NumPy, SQL, Weights & Biases, Docker, Git/GitHub
- **Writing & Reproducibility**: L^AT_EX, Overleaf, Markdown, Jupyter Notebooks