Indiana University
USA
zoher.kachwala@gmail.com
zoher15.github.io/
www.linkedin.com/in/zoher-kachwala/
github.com/Zoher15/

Zoher Kachwala

Curriculum Vitae

Education

Dec 2025 **PhD in Computer Science**, *Indiana University*, USA
CGPA: 3.7/4.0

May 2022 **MS in Data Science**, *Indiana University*, USA

May 2019 **MS in Computer Science**, *Indiana University*, USA

Research Interests

My research focuses on enhancing LLM reasoning during inference, particularly at the token decoding stage. I aim to identify patterns that estimate a model's confidence in its responses and develop methods to improve this confidence through guided decoding. I approach this in two key ways. First, I explore diverse chains of thought and implement advanced voting/aggregation mechanisms that consider not only top-ranked answer tokens but also lower-ranked alternatives. Second, I enhance the model's reasoning by incorporating soft signals, such as answer labels, to guide its chain of thought toward more accurate responses.

Publications

Nov 2024- **Advanced Heuristics for LLM Decoding Improves CoT Reasoning**, *In progress*
Enhancing the Chain-of-thought reasoning of LLMs by exploring different heuristics for greedy decoding.

Oct 2024- **Advanced Ensembling Improves Self-Consistency of CoT Reasoning**, *In progress*
Enhancing the reasoning of LLMs by exploring advanced aggregation techniques to incorporate diverse Chains-of-thought.

Oct 2024- **Self-consistency with Chain-of-thought Improves Social Media Moderation by LLMs**, *In progress*
Sampling multiple Chains-of-thought to improve auto-moderation of social media communities on Reddit and Mastodon by Large Language Models.

Sep 2024- **Self-consistency with Chain-of-thought Can Improve Detection of AI-Images by VLLMs**, *In progress*
Sampling multiple Chains-of-thought to improve detection of AI-generated images by a Vision Large Language Models.

2023 **REMATCH: Robust and Efficient Knowledge Graph Matching**, *NAACL 2024*
A metric that balances structural similarity of AMRs with the semantic similarity of source text, while being five times more efficient.

2023 **A Multi-Platform Collection of Social Media Posts about the 2022 U.S. Midterm Elections**, *ICWSM 2023*
Collected social media posts from multiple platforms (Twitter, Facebook, Instagram, Reddit, 4chan).

2023 **The Inexplicable Efficacy of Language Models**, *XRDS: Crossroads, ACM Magazine*
A brief insight into the development and rise of language modeling.

Research Projects

Jan 2019-May 2023 **Text2Graph**
Developed a tool that uses semantic role labeling to create pseudo-AMRs from text.

May 2021-Aug 2021 **Review of Attention Models**
Explored transformer-based language models (BERT, GPT) and their applications, securing passage of doctoral candidacy exam.

Oct 2021-May 2021 **DARPA INCAS Team**
Developed tools for DARPA INCAS to prevent malicious influence campaigns online.

Teaching Experience

Fall 2022, Fall 2023, Fall 2024 **Introduction to Network Science**, *Indiana University*
Developed and conducted coding-based network science tutorials to reinforce theoretical concepts.

Fall 2019, Spring 2021, Fall 2021 **Elements of Artificial Intelligence**, *Indiana University*
Built a pytest autograder for the popular AI course, grading homework for over 300 students.

Fall 2020 **Applied Machine Learning**, *Indiana University*
Assisted with course instruction and helped students with hands-on machine learning assignments.

Internships

Summer 2018 **Technology Consultant**, *PricewaterhouseCoopers*
Worked on technology consultancy projects, providing recommendations on systems integration and IT management.

Service

Peer Reviewer *Peerj Computer Science*

Harvard WorldMUN Represented India and NMIMS at the "Olympics of Model UN" with 2000+ participants from 110 countries.

Graduate Government Representative of the Computer Science department at Indiana University.

Ambassador Coordinated visits for prospective students and assisted in their integration into university life.

Technical Skills

Programming Languages Python, Bash, C++, R

Libraries & Tools NumPy, SciKit, ScaPy, Pandas, NetworkX, PyTorch, Tensorflow, Neo4J, MySql

Frameworks Knowledge Graph Mining, Transformer Models, Fact-checking, Markov Models

Hobbies

Interests Liverpool Football Club, Cooking, Baking, Resistance Training, Board Games, Operas, Orchestras, Theatre, Hiking, Galleries.