

# 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

I am passionate about enhancing the reasoning capabilities of Large Language Models and Vision-Language Models. My work focuses on improving the reasoning of these 'general' models solely through token decoding, without any additional training or fine-tuning. I explore advanced token decoding strategies, like sampling, prompting, and heuristic search algorithms such as A\*.

### Publications

- Nov 2024- **Limiting Self-consistency to Factual Tokens to Improve Reasoning**, *In progress*  
Sampling multiple Chains-of-thought by allowing diversity only for factual tokens during decoding.
- Oct 2024- **Automatic Few Shot Prompting Using Self-Elicited CoT**, *In progress*  
Automatic Chain-of-thought prompting created by first eliciting Chain-of-thought from the Language Model without prompting.
- Oct 2024- **Self-consistency with Chain-of-thought Can Improve 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.
- Apr 2024- **Increasing Facts Improves Chain-of-thought Reasoning of LLMs**, *In progress*  
Developing Chain-of-thought prompts that include more facts to improve reasoning of 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* **Text2Graph**  
*2019-May* Developed a tool that uses semantic role labeling to create pseudo-AMRs from text.  
*2023*
- May* **Review of Attention Models**  
*2021-Aug* Explored transformer-based language models (BERT, GPT) and their applications, securing passage of  
*2021* doctoral candidacy exam.
- Oct* **DARPA INCAS Team**  
*2021-May* Developed tools for DARPA INCAS to prevent malicious influence campaigns online.  
*2021*

## Teaching Experience

- Fall 2022,* **Introduction to Network Science, Indiana University**  
*Fall 2023,* Developed and conducted coding-based network science tutorials to reinforce theoretical concepts.  
*Fall 2024*
- Fall 2019,* **Elements of Artificial Intelligence, Indiana University**  
*Spring 2021,* Built a pytest autograder for the popular AI course, grading homework for over 300 students.  
*Fall 2021*
- 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* *Peerj Computer Science*  
*Reviewer*
- Harvard* Represented India and NMIMS at the "Olympics of Model UN" with 2000+ participants from  
*WorldMUN* 110 countries.
- Graduate* Representative of the Computer Science department at Indiana University.  
*Government*
- Ambassador* Coordinated visits for prospective students and assisted in their integration into university life.

## Technical Skills

- Programming* Python, Bash, C++, R  
*Languages*
- Libraries &* NumPy, SciKit, ScaPy, Pandas, NetworkX, PyTorch, Tensorflow, Neo4J, MySql  
*Tools*
- 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.