Zoher Kachwala

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GitHub LinkedIn Homepage

Research Interest

I am passionate about bridging the gap between language understanding and structured knowledge. I am particularly intrigued by the potential of local knowledge graphs like Abstract Meaning Representations (AMRs), to augment Large Language Models (LLMs) in trust-sensitive applications like fact-checking and question answering. My current research focuses on developing efficient graph-based methods to leverage and evaluate the semantic richness of AMRs.

Papers and Articles

MISMATCH of Knowledge Graphs for Natural Language Inference Jan 2024-
In Progress
A metric that can leverage mismatching AMRs to infer textual entailment

REMATCH: Robust and Efficient Knowledge Graph Matching for Improved Structural and Semantic Similarity Jan 2023-Dec 2023
NAACL 24
A metric that balances structural similarity of AMRs with the semantic similarity of source text, while being five times more efficient

A Multi-Platform Collection of Social Media Posts about the 2022 U.S. Midterm Elections Aug 2022-May 2023
ICWSM 2023
A collection of social media posts from Twitter, Facebook, Instagram, Reddit, and 4chan

The Inexplicable Efficacy of Language Models Nov 202-Jan 2023
XRDS: Crossroads, The ACM Magazine for Students
A brief insight into the development and rise of Language Modeling

Research Projects

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

Review of Attention Models May 2021-Aug 2021
Deep dive into transformer-based language models (BERT, GPT) secured passage of doctoral candidacy exam

DARPA INCAS Team Oct 2021-May 2021
Part of a team developing tools for DARPA INCAS to prevent malicious influence campaigns online.

Teaching

Introduction to Network Science Fall 2022, Fall 2023, Fall 2024
Developed and conducted coding-based network science tutorials using programming to reinforce theoretical concepts in class.

Elements of Artificial Intelligence Fall 2019, Spring 2021, Fall 2021
The most popular graduate course at our university that dives deep into AI, from search algorithms to neural nets. To grade the homeworks of 300 students, I built a pytest autograder

Applied Machine Learning Fall 2020

Class Projects

Generative Models for MNIST Digit Images Fall 2020
Leveraged deep learning (GANs, RNNs, VAEs) to generate user-queried digits, impute missing data, and represent irregular patterns in MNIST images

Speech Denoising and Speaker Verification Fall 2020
Applied deep learning (FCNs, CNNs, RNNs) for speech denoising and speaker verification (Siamese Nets, 74% accuracy)

Part-of-Speech Tagging Fall 2017
Our n-gram-based POS tagger achieved 95.38% accuracy and 7.826ms/sentence runtime on a dataset of 50k sentences, ranking 2nd among 50 teams in a competition

Education

Indiana University, USA
CGPA 3.62
PhD in CS May 2025
MS in Data Science May 2022
MS in CS May 2019

NMIMS Mumbai, India
First Class
B.Tech CE May 2017

Technical Familiarity

Python, Bash, NumPy, SciKit, ScaPy, Pandas, NetworkX, PyTorch, Tensorflow, Neo4J, MySql, R, C++.

Research Familiarity

Attention Models, Transformer Architecture, Knowledge Graph Mining and Construction, Multi-hop Fact-checking, Graph Search, Markov Models, Linear and Logistic Regression, Clustering Techniques, Ensemble Learning, Word2Vec, Transformers, Gender and Computerization

Internships

PricewaterhouseCoopers
Technology Consultant
Summer 2018

Service

Peerj Computer Science
Peer Reviewer

Harvard WorldMUN
Represented India and NMIMS at 'olympics of Model UN' with 2000+ participants from 110 countries

Graduate Government IU
Representative of the Computer Science department

Luddy Ambassador IU
Coordinated visits for prospective students and help them settle at IU

Hobbies

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