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Kartik Sharma

https://ksartik.github.io
Google Scholar

RESEARCH INTERESTS

Controllable Generation, Graph Representation Learning, Adversarial Robustness, Structural Alignment

EDUCATION

Georgia Institute of Technology Atlanta, GA
Ph.D. in Computer Science *Aug 2021 – Present*

- **Advisor**: Prof. Srijan Kumar, Assistant Professor, CSE

Indian Institute of Technology, Delhi New Delhi, India
Bachelor of Technology in Computer Science and Engineering. GPA: 9.0/10.0 *Jul 2017 – May 2021*

- **Advisor**: Prof. Sayan Ranu, Associate Professor, CSE
- **UG Thesis topic**: Adversarial attacks on Graph Neural Networks

WORK EXPERIENCE

Visa Research Palo Alto, CA
Research Intern *May 2023 – Aug 2023*

- Developed a plug-and-play method to classify nodes using a personalized scope of its local neighborhood
- Experiments show improved robustness, interpretability, and heterophily performance *(submitted to ICML 2024)*

Tensor Dynamics Pvt. Ltd. New Delhi, India
Founding Member *Sep 2018 – Jul 2021*

- Developed initial code-base for a green-tech startup to provide reliable solar energy forecasts
- Forecasting models deployed by Load Dispatch Centre to monitor over 20 solar stations across India

PREPRINTS

- Mysterious Projections: Multimodal LLMs Gain Domain-Specific Visual Capabilities Without Richer Cross-Modal Projections.   Gaurav Verma, Minje Choi, **Kartik Sharma**, Jamelle Watson-Daniels, Sejoon Oh, Srijan Kumar.
- A Survey of Graph Neural Networks for Social Recommender Systems.   **Kartik Sharma**[*], Yeon-Chang Lee[*], Sivagami Nambi, Aditya Salian, Shlok Shah, Sang-Wook Kim, Srijan Kumar.

PUBLICATIONS

- Plug-and-Play Controllable Graph Generation with Diffusion Models.   **Kartik Sharma**, Srijan Kumar, and Rakshit Trivedi. *ICML Workshop on Structured Probabilistic Inference & Generative Modeling, 2023 (full version under review)*
- Representation Learning in Continuous-Time Dynamic Signed Networks.   **Kartik Sharma**[*], Mohit Raghavendra[*], Yeon Chang Lee, Anand Kumar M, Srijan Kumar. *ACM International Conference on Information and Knowledge Management (CIKM), 2023*
- Temporal Dynamics-Aware Adversarial Attacks on Discrete-Time Dynamic Graph Models.   **Kartik Sharma**, Rakshit Trivedi, Rohit Sridhar, Srijan Kumar. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), Research Track, 2023 (also NeurIPS Workshop on Temporal Graph Learning (TGL), 2022)*
- Predicting Information Pathways Across Online Communities.   Yiqiao Jin, Yeon-Chang Lee, **Kartik Sharma**, Meng Ye, Karan Sikka, Ajay Divakaran, Srijan Kumar. *ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), Research Track, 2023*
- Task and Model Agnostic Adversarial Attack on Graph Neural Networks.   **Kartik Sharma**, Samidha Verma, Sourav Medya, Sayan Ranu, and Arnab Bhattacharya. *AAAI Conference on Artificial Intelligence, 2023*
- Balance maximization in Signed Networks via Edge Deletions.   **Kartik Sharma**, Iqra Altaf Gillani, Sourav Medya, Sayan Ranu, Amitabha Bagchi. *ACM International Conference on Web Search and Data Mining (WSDM), 2021*
- Clause Final Verb Prediction in Hindi: Evidence for Noisy Channel Model of Communication.   **Kartik Sharma**, Niyati Bafna, Samar Husain. *Cognitive Modeling & Computational Linguistics (CMCL) Workshop, 2021*
- What determines the order of verbal dependents in Hindi ? Effects of efficiency in production & comprehension.   **Kartik Sharma**, Richard Futrell, Samar Husain. *Cognitive Modeling & Computational Linguistics (CMCL), 2020*
- Can Greenbergian universals be induced from language networks ?   **Kartik Sharma**, Kaivalya Swami, Aditya Shete, Samar Husain. *Treebanks and Linguistic Theories (TLT) Workshop, 2019*

Honors & Awards

- **Suresh Chandra Memorial Trust Award**: Best undergraduate thesis in CSE, IIT Delhi
- **Summer Undergraduate Research Award**: For credible research in summers 2019, IIT Delhi
- **Semester Merit Award**: Awarded in 2017 by IIT-Delhi
- **All India Rank 197**: Joint Entrance Examination-Advanced among 100k qualified candidates
- **All India Rank 250**: Joint Entrance Examination-Mains among million candidates

Teaching & Volunteering

- **PC Member/Reviewer**: ACL 2024; KDD 2022, 2023 2024; SDM 2024; AAAI 2024; LOG 2023; TNNLS 2023; SPIGM@ICML 2023; TGL@NeurIPS 2022, 2023; ECML PKDD 2022
- **Student volunteer**: AAAI 2023
- **Teaching Assistant, CSE 6240, Georgia Tech**: Course included in Course-Instructor Opinion Survey Honor Roll
- **Teaching Assistant, I-STEM**: For visually-impaired students in an online Data Structures course

Skills

Languages: Python, C++, R, OCaml, Java, MATLAB

Libraries: TorchGeometric, TorchGeometricTemporal, Pytorch, Tensorflow, Sklearn, Scipy, Numpy, Pandas

References

- **Prof. Srijan Kumar**: Assistant Professor, Georgia Institute of Technology
- **Dr. Rakshit Trivedi**: Postdoctoral Associate, Massachusetts Institute of Technology
- **Prof. Sayan Ranu**: Associate Professor, Indian Institute of Technology, Delhi (IIT Delhi)
- **Prof. Sourav Medya**: Assistant Professor, University of Illinois, Chicago (UIC)