Sarkar Snigdha Sarathi Das

Contact Information

Department of Computer Science and Engineering (CSE)
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Research Interests

Strategy and Prompt Optimization for Large Language Models, Few-Shot Learning for diverse NLP tasks, Parameter Efficient Fine-Tuning

Education

Ph.D. Candidate January 2021 - Present
Department of Computer Science and Engineering (CSE)
The Pennsylvania State University, State College, PA
Advisor: Dr. Rui Zhang

B. Sc. in CSE February 2015 - April 2019
Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
Advisor: Dr. Mohammed Eunus Ali
CGPA: 3.94/4.00

Work Experience

Research Intern June 2023 - August 2023
Microsoft Research, Redmond, WA
Project: Joint Dialogue Segmentation and State Tracking
Mentors: Tara Safavi, Jennifer Neville, Longqi Yang

Applied Science Intern June 2022 - August 2022
Amazon Alexa, Sunnyvale, CA
Mentor: Mina Ghashami

Graduate Researcher January 2021 - Present
Natural Language Processing Lab, Department of CSE, Pennsylvania State University

Graduate Researcher May 2019 - December 2020
Data Science and Engineering Research Laboratory, BUET

Publications & Preprints

P1. Sarkar Snigdha Sarathi Das, Ryo Kamoi, Bo Pang, Yusen Zhang, Rui Zhang. GReaTer: Gradients over Reasoning makes smaller Language Models Strong Prompt Optimizers *ICLR 2025*

P2. Ryo Kamoi, **Sarkar Snigdha Sarathi Das**, Renze Lou, Jihyun Janice Ahn, Yilun Zhao, Xiaoxin Lu, Nan Zhang, Yusen Zhang, Ranran Haoran Zhang, Sujeeth Reddy Vummanthala, Salika Dave, Shaobo Qin, Arman Cohan, Wenpeng Yin, Rui Zhang. Evaluating LLMs at Detecting Errors in LLM Responses *COLM, 2024*

P3. Sarkar Snigdha Sarathi Das, Chirag Shah, Mengting Wan, Jennifer Neville, Longqi Yang, Reid Andersen, Georg Buscher, Tara Safavi. S3-DST: Structured Open-Domain Dialogue Segmentation and State Tracking in the Era of LLMs *Findings of ACL 2024*

P4. Sarkar Snigdha Sarathi Das, Haoran Ranran Zhang, Peng Shi, Wenpeng Yin, Rui Zhang. Unified Low-Resource Sequence Labeling by Sample-Aware Dynamic Sparse Finetuning *EMNLP 2023*

P5. Abdullah Al Ishtiaq, **Sarkar Snigdha Sarathi Das**, Syed Md Mukit Rashid, Ali Ranjbar, Kai Tu, Tianwei Wu, Zhezheng Song, Weixuan Wang, Mujtahid Al-Islam Akon, Rui Zhang, Syed Rafiul Hussain. Hermes: Unlocking Security Analysis of Cellular Network Protocols by Synthesizing Finite State Machines from Natural Language Specifications *USENIX Security 2024*

P6. Sarkar Snigdha Sarathi Das, Arzoo Katiyar, Rebecca J. Passonneau, Rui Zhang. CONTaiNER: Few-Shot Named Entity Recognition via Contrastive Learning *ACL 2022*

P7. Sarkar Snigdha Sarathi Das, Subangkar Karmaker Shanto, Masum Rahman, Md. Saiful Islam, Atif Rahman, Mohammad Mehedy Masud, Mohammed Eunus Ali. BayesBeat: A Bayesian Deep Learning Approach for Atrial Fibrillation Detection from Noisy Photoplethysmography Data *UbiComp 2022 (IMWUT Article 8, Vol. 6, March 2022)*

P8. Sarkar Snigdha Sarathi Das, Mohammed Eunus Ali, Yuan-Fang Li, Yong-Bin Kang, Timos Sellis. Boosting House Price Predictions using Geo-Spatial Network Embedding *Data Mining and Knowledge Discovery (2021)*

P9. Md. Ashraful Islam, Mir Mahathir Mohammad, **Sarkar Snigdha Sarathi Das**, Mohammed Eunus Ali. A Survey on Deep Learning Based Point-Of-Interest (POI) Recommendations *Neurocomputing (2022)*

P10. Sarkar Snigdha Sarathi Das, Syed Md Mukit Rashid, Mohammed Eunus Ali. CCCNet: An Attention Based Deep Learning Framework for Categorized Counting of Crowd in Different Body States *International Joint Conference on Neural Networks (IJCNN), IEEE 2020*

Preprint 1. Chirag Shah, Ryen W. White, Reid Andersen, Georg Buscher, Scott Counts, **Sarkar Snigdha Sarathi Das**, Ali Montazer, Sathish Manivannan, Jennifer Neville, Xiaochuan Ni, Nagu Rangan, Tara Safavi, Siddharth Suri, Mengting Wan, Leijie Wang, Longqi Yang. Using Large Language Models to Generate, Validate, and Apply User Intent Taxonomies *arXiv 2309.13063*

Preprint 2. Yusen Zhang, **Sarkar Snigdha Sarathi Das**, Rui Zhang. VERBOSITY $\neq$ VERACITY: Demystify Verbosity Compensation Behavior of Large Language Models *arXiv 2411.07858*

Preprint 3. Ryo Kamoi, Yusen Zhang, **Sarkar Snigdha Sarathi Das**, Ranran Haoran Zhang, Rui Zhang. VisOnlyQA: Large Vision Language Models Still Struggle with Visual Perception of Geometric Information *arXiv 2412.00947*

OTHER PROJECTS

- Security Analysis of Cellular Network Protocols by Synthesizing Executable Specification from Natural Language Design Specifications

- Illumina Read Simulator
  We worked on simulating illumina reads using a variational autoencoder that effectively generates the perturbations in the read sequences.

HONORS AND AWARDS

- Dr. Tse-Yun Feng Graduate Student Award 2022 (Outstanding RA award in the Department of CSE, Pennsylvania State University)
- Champion, Seeds for the Future, 2019 (Travel Grant by Huawei Technologies)
- Graduation with Honours
- Higher Secondary Board Merit Scholarship
- Junior Merit Scholarship
- Primary Merit Scholarship

Technical Skills

Programming Languages: C, C++, Python, Java, Assembly Language (Intel x86, MIPS)
Deep Learning Frameworks: PyTorch, TensorFlow, Keras
Scripting Languages: HTML, LaTeX, Bash
SQL Databases: Oracle SQL, MySQL, PostgreSQL, SQLite
Hardware: ATmega-32, Arduino

Professional Services

- Reviewer, EMNLP 2022, ACL 2023, EMNLP 2023, ACL ARR 2024
- Additional Reviewer, ACM SIGSPATIAL, 2019-2020
- Sub-Reviewer, AAAI 2020, ICDE 2021
- Reviewer, NSysS 2020

Professional Reference

Rui Zhang
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Rebecca J. Passonneau
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