Inwon Kang

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Research Interests

Deep Learning on Tabular Data, Efficient Learning, Explainable Machine Learning

Education

Ph.D. in Computer Science 2022.08 - Current
Rensselaer Polytechnic Institute

Advised by Professor Oshani Seneviratne. My current research focus is on scalable machine learning on structured data.

M.S. in Computer Science 2021.08 - 2022.05
Rensselaer Polytechnic Institute

Advised by Professor Lirong Xia. Worked on explainable AI for computational social choice.

B.S. in Computer Science 2017.08 - 2021.05
Rensselaer Polytechnic Institute

Concentration in AI/ML

Experience

Research Assistant | *Rensselaer Polytechnic Institute* 2024.01 - Current
Tabular Data, Deep Learning, Language Models

- Funded by RPI IBM collaboration (FCRC) to investigate data distillation for tabular data using foundational models.
- Continuation of project from research intern experience.

Research Intern | *IBM – T.J. Watson Center, Yorktown NY* 2024.05 - 2024.08
Tabular Data, Deep Learning, Data Distillation

- Investigating model reprogramming to apply pretrained language models to tabular data.
- Proposed and implemented a novel graph-based meta architecture to leverage trained embeddings across different datasets.

Research Intern | *IBM – T.J. Watson Center, Yorktown NY* 2023.05 - 2023.08
Deep Learning, Data Distillation

- Worked as a research intern in AI & Automation department.
- Implemented and experimented with an automated AI pipeline using ray tune and pytorch.
- Accepted to AAAI Student Abstract track, selected for oral presentation.

Undergraduate Researcher | *Rensselaer Polytechnic Institute* 2020.10 - 2021.05
Crowdsourcing, Explainable AI

- Joined Professor Lirong's group as an undergraduate student and worked on various projects, such as conducting surveys through Amazon Mechanical Turk to collect datasets and using GNNs to build NLP models that improved on past works.
- Built a website using Google sheet's API as a database to collect user responses for a survey on human perception of fairness in Gerrymandering.

Skills

Programming Languages

- Comfortable with: Python, Javascript, TypeScript
- Have used: Java, C, C++, Solidity, C#

Machine Learning Libraries

- Comfortable with: pytorch, pytorch-geometric, scikit-learn, opencv, torchvision, nltk, spacy, pandas, numpy, ray-tune
- Have used: jax, tensorflow, keras

HPC & Cloud Platforms

- Comfortable with: SLURM, docker, anything debian-based, LSF.
- Have used: AWS, GCP

Awards & Achievements

- AAAI-24 Student Travel Scholarship
- Letter of Recognition – *CSCI-6964 (Blockchain and AI), Fall '22*
- Letter of Recognition – *CSCI-4964 (Graph Mining), Spring '20*
- RPI Dean's Honor List – *Spring '20, Fall '20, Spring '21*
- WebSci-24 Fair Access Travel Grant
- Founder's Award of Excellence – *Fall '25*

Professional Service

- Volunteer for AAAI-24
- Reviewer for WebSci-24, 25, 26
- Reviewer for ICLR-25, 26
- Reviewer for ACML-26
- Reviewer for AISTATS-26

Publications

- *Language Model Representations for Efficient Few-Shot Tabular Classification* **I. Kang**, P. Ram, Y. Zhou, H. Samulowitz, O. Seneviratne. *Under Review* – Conference
- *On Learning Representations for Tabular Data Distillation* **I. Kang**, P. Ram, Y. Zhou, H. Samulowitz, O. Seneviratne. TMLR – Journal
- *Advancing Web Science through Foundation Model for Tabular Data* **I. Kang**. WebSci-24 – Conference (Doctoral Consortium)
- *Deciphering Crypto Twitter* **I. Kang**, M. A. Mridul, A. Sanders, Y. Ma, T. Munasinghe, A. Gupta, O. Seneviratne. WebSci-24 – Conference
- *Effective Distillation for Tabular Datasets (Student Abstract – Oral competition finalist)* **I. Kang**, P. Ram, Y. Zhou, H. Samoluwitz, O. Seneviratne. AAAI-24 – Conference
- *Using Large Language Models for Generating Smart Contracts for Health Insurance from Textual Policies* **I. Kang**, W. Van Woensel, O.Seneviratne. W3PHIAI-24 – Workshop (AAAI)
- *Learning to Explain Voting Rules* **I. Kang**, Q. Han, L. Xia. AAMAS–23 – Extended Abstract
- *Dependency and Coreference-boosted Multi-Sentence Preference model* F. Mohsin, **I. Kang**, Y. Chen, J. Shang, L. Xia. DLG-AAAI-23 – Workshop
- *Blockchain Interoperability Landscape* **I. Kang**, A. Gupta, O. Seneviratne. IEEE BigData-2022 – Workshop
- *Making group decisions from natural language-based preferences* F. Mohsin, L. Luo, W. Ma, **I. Kang**, Z. Zhao, A. Liu, R. Vaish, L. Xia. COMSOC-21
- *Learning Individual and Collective Priorities over Moral Dilemmas* F. Mohsin, **I. Kang**, P.Y. Chen, F. Rossi, L. Xia. MPREF-22 – Workshop (IJCAI)
- *Analyzing and predicting success of professional musicians* **I. Kang**, M. Mandulak, B.K. Szymanski. Scientific Reports – Journal, 2022
- *Crowdsourcing Perceptions of Gerrymandering* B. Kelly, **I. Kang**, L. Xia. HCOMP-22 – Conference/AAAI