Inwon Kang

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Research Interests

Deep Learning, 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 and decentralized machine learning on stuctured data.

M.S. in Computer Science 2021.08 - 2022.05
Rensselaer Polytechnic Institute
Advised by Professor Lirong Xia.
My final project was on collection&analysis of a dataset on human perception of Gerrymandering.

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
Deep Learning, Data Distillation, Foundation Model
- Funded by RPI IBM collaboration (AIRC) 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
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 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

Web Frameworks
- Comfortable with: Django, FastAPI, Flask, React.js, Next.js
- Have used: .Net

Environments
- Comfortable with: Linux (Debian-based), OsX
- Have used: Docker

Awards & Achievements

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

Professional Service

- Volunteer for AAAI-24
- Reviewer for WebSci-24
- Reviewer for Data-Centric Artificial Intelligence (DCAI) Workshop at WWW-24
- Reviewer for ICLR-25

Publications

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