Jonathan Zheng

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Education

Georgia Institute of Technology Atlanta, GA
Bachelor of Science in Computer Science – 4.0 GPA *Aug. 2019 – May 2023 (Expected)*
Specification: Intelligence-Theory
GPA: 4.0 / 4.0
GRE: 163 / 170 V, 169 / 170 Q, 5.5/6.0 W
Featured Coursework: Natural Language, Computer Vision, Machine Learning, Introduction to Graduate Algorithms Linear Algebra, Database Systems, Algorithm Design, Automata and Complexity, Introduction to Artificial Intelligence

Research Experience

Broad-coverage Multi-culture Stance Classification *Aug. 2020 - Jun. 2022*
Georgia Institute of Technology
Advisors: Wei Xu, Alan Ritter

- Conducted a study on misinformation claims and its prevalence on Twitter for English
- Expanded on the limitations and lack of generalizability of previous datasets by selecting a set of 250 multilingual and multicultural misinformation and valid claims from fact-checking websites in English, Arabic, and Hindi
- Developed a new labeling methodology with explicit and implicit stances to capture the nuances of argumentation discourse that occurs online with respect to misinformation
- Built baseline models by finetuning large language models with Pytorch for pairwise text classification to label for stance on a misinformation claim
- Employed domain adaptation and cross-lingual transfer to address the issue of limited data for individual claims and in low-resource languages
- Trained baseline architectures with a new loss function to mitigate stance imbalance and improve stance classification performance of baseline models
- **Accepted to EMNLP 2022 [1]**

Neologisms and Data Drift *April. 2022 - Present*
Georgia Institute of Technology
Advisors: Wei Xu

- Conducted a study on neologisms occurring on social media and computationally obtained a set of neologisms that became popular in usage starting from 2020
- Collected noisy sentences from Twitter and Reddit that naturally contains a neologism to establish model performance on sentences with instances of new words
- Evaluated the capabilities of text generation models to answer cloze questions and open-domain questions adequately and measured language model likelihood on sequences containing new words
- Analyzed machine translation quality of sentences containing neologisms by establishing a multi-tiered annotation system to evaluate translation system failures
- Implemented a shallow model augmentation by adding definitions of new words and Google Search items in the input of models as a prompt to provide knowledge updates to the model

Pre-prints

[1] NEO-BENCH: Evaluating Robustness of Large Language Models with Neologisms
Jonathan Zheng, Alan Ritter, Wei Xu

- Links: [paper]

Publications

[1] Stanceosaurus 2.0: Classifying Stance Towards Russian and Spanish Misinformation
Anton Lavrouk, Ian Ligon, Tarek Naous, **Jonathan Zheng**, Alan Ritter, Wei Xu
- Proceedings of the Ninth Workshop on Noisy and User-generated Text (W-NUT 2024) (short paper)
- Links: [paper]

[2] Broad-coverage Multi-culture Stance Classification
Jonathan Zheng, Ashutosh Baheti, Tarek Naous, Wei Xu, Alan Ritter
- Proceedings of EMNLP 2022 (long paper)
- Links: [paper]

The papers can be found on my webpage.

Teaching

Introduction to Artificial Intelligence (CS 3600) August 2021 – December 2021
Teaching Assistant Georgia Institute of Technology
- Helped to teach the largest introductory AI course of over 300 students by managing the Piazza forum
- Held bi-weekly office hours to assist students in course concerns, course logistics, and course concepts
- Organized bi-monthly review sessions to go over course concepts for every project and exam
- Worked under Professor Mark Riedl

Experience

Software Engineering Intern May 2021 – August 2021
XPO Logistics *Marietta, GA*
- Built an LSTM and RNN deep neural network to forecast work orders for individual market hubs and companies
- Built data pipelines to validate data forecasts and upload them to BigQuery for data visualization
- Conducted ablation studies and feature engineering to improve forecast performance of deep learning models

Exchange Student Sydney, Australia
Bachelor of Science in Computer Science *Aug. 2022 – Dec. 2022*
Concentration: Artificial Intelligence
- Cultural Experience by doing an exchange program to the University of New South Wales in Sydney, Australia

Projects

Financial Sentiment Analysis | *Python, Jupyter Notebook, TensorFlow, scikit-learn* May 2020 – Aug. 2020
- Trained Natural Language Processing machine learning models to conduct financial sentiment analysis on the Financial PhraseBank dataset
- Built Logistic Regression, Convolutional, and Recurrent Neural Network models based on previous research

Awards

Academic: President's Undergraduate Research Award 2022

Technical Skills

Languages: English, Mandarin (limited working proficiency), Japanese (limited working proficiency)
Programming: Python, Java, JavaScript, C, HTML, CSS, R, LaTeX, Assembly, SQL
Libraries: Pandas, NumPy, Matplotlib, SciPy, Scikit-learn, PyTorch, TensorFlow, HuggingFace, Transformers
Frameworks: React, Node.js, JUnit
Developer Tools: Git, VS Code, Visual Studio, IntelliJ, Jupyter Notebook, PyCharm, BigQuery, Google Cloud, Microsoft Azure
Related Coursework: Linear Optimization, Mathematical Foundations of Machine Learning

References

Professor Wei Xu *Georgia Institute of Technology*
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Professor Alan Ritter *Georgia Institute of Technology*
- alan.ritter@cc.gatech.edu

Professor Mark Riedl *Georgia Institute of Technology*
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