

LI Ang



Phone: (+86) 18531276215 **Email:** angli@stu.hit.edu.cn
Birth: Feb. 2000 **Homepage:** <https://leon-francis.github.io/>
Research Interests: Affective Computing,
Multimodal
Large Language Models **Supervisor:** Prof. XU Ruifeng
Prof. WONG Kam-Fai

EDUCATION

Chinese University of Hong Kong	Sep. 2025 (Expected) – Jun. 2029 (Expected)
Degree: Ph.D. Major: Engineering	
Harbin Institute of Technology (Shenzhen)	Sep. 2022 – Jun. 2025 (Expected)
Degree: Master Major: Computer Technology	Rank: 4/124 (Top 3%) GPA: 3.519/4
North China Electric Power University	Sep. 2018 – Jun. 2022
Degree: Bachelor Major: Computer Science and Technology	Rank: 1/126 (Top 1%) GPA: 91.56/100

RESEARCH

Bin Liang*, Ang Li* , Jingqian Zhao, Lin Gui, Min Yang, Yue Yu, Kam-Fai Wong, Ruifeng Xu. <i>Multi-modal Stance Detection: New Datasets and Model</i> . (* indicates equal contribution) Accepted by ACL (2024) Findings .	Mar. 2023-Feb. 2024
--	---------------------

Motivation: Previous stance detection research primarily focused on text. In this work, we explore multimodal stance detection involving both text and images.

Method: We created five new multimodal stance detection datasets based on Twitter, each sample consisting of a text and an image. We propose a simple yet effective targeted multimodal prompt tuning framework that leverages target information to learn multimodal stance features from both textual and visual modalities.

Results: Experiments on five benchmark datasets demonstrate that our proposed framework achieves optimal performance in multimodal stance detection compared to baseline methods.

Ang Li , Bin Liang, Jingqian Zhao, Bowen Zhang, Min Yang, Ruifeng Xu. <i>Stance Detection on Social Media with Background Knowledge</i> . Accepted by EMNLP (2023) Main Conference .	Feb. 2023-Jun. 2023
--	---------------------

Motivation: In this work, we explore stance detection from a new perspective, considering the target's background knowledge to enhance the model's understanding of the target's stance.

Method: We categorize background knowledge into episodic knowledge and discourse knowledge. For episodic knowledge, we designed a heuristic retrieval algorithm based on the Topic Model. For discourse knowledge, we constructed a prompt for GPT-3.5 to paraphrase hashtags, references, etc., in samples, thereby injecting discourse knowledge.

Results: The results on four stance detection benchmarks indicate that the fine-tuned models as well as large language models with our knowledge-augmented stance detection framework show significant performance improvements.

Hongtao Wang*, Ang Li* . <i>Are Deep Neural Network Robust To Named Entities? An Adversarial Attack And Defense Perspective</i> . (* indicates equal contribution) Accepted by ICASSP (2023) .	Jun. 2022-Sep. 2022
--	---------------------

Motivation: Word-level adversarial attacks can deceive deep classifiers. In this paper, we explore whether deep text classifiers can resist the replacement of named entities.

Method: We propose an effective named entity adversarial attack method. Experiments show that deep text classifiers are highly sensitive to the replacement of named entities. To improve the robustness of classifiers, we also propose three defense strategies: mask replacement, concept replacement, and data augmentation based on NE sampling.

Results: Experiments on a series of sentiment classification datasets demonstrate that our defense strategies are effective against named entity adversarial attacks.

Ang Li , Fangyuan Zhang, Shuangjiao Li, Tianhua Chen, Pan Su, Hongtao Wang. <i>Efficiently generating sentence-level textual adversarial examples with Seq2seq Stacked Auto-Encoder</i> . Accepted by Expert Systems with Applications .	Sep. 2021-Jun. 2022
--	---------------------

Motivation: The discrete of text makes generating high-quality adversarial text examples more challenging in natural language processing.

Method: We propose an end-to-end Seq2seq Stacked Auto-Encoder (SSAE) network, where the outer auto-encoder preserves syntactic and semantic information of the original examples. The inner auto-encoder projects sentence embeddings to a higher-

level semantic representation, then adds limited perturbations to increase adversarial capability.

Results: Compared to existing attack methods, SSAE has a higher success rate of attacks, and the speed of generating effective adversarial samples is 100 to 700 times faster than word-based methods.

Ang Li* , Xingwei Liang*, Miao Zhang, Bingbing Wang, Guanrong Chen, Jun Gao, Qihui Lin, Ruifeng Xu. <i>A Coarse-to-Fine Text Matching Framework for Customer Service Question Answering</i> . (* indicates equal contribution) Accepted by ICCV (2022) Best Paper Award.	Mar. 2022-Sep. 2022
--	---------------------

Motivation: To address the issue of low match success rates and high computational costs in customer service question-answering systems, we propose a Coarse-to-Fine Text Matching (CFTM) framework.

Method: The CFTM combines Fasttext for coarse-grained classification with Roformer-sim for fine-grained sentence vector matching, optimized with the CoSENT loss function. To reduce response time, we use Faiss for vector retrieval optimization and deploy the model with ONNX.

Results: On two customer service datasets, the CFTM outperforms baseline models across all metrics, improving the F1 score by 2.5% and reducing inference time by 30%.

Ang Li , Jingqian Zhao, Bin Liang, Lin Gui, Hui Wang, Xi Zeng, Kam-Fai Wong, Ruifeng Xu. <i>Mitigating Biases of Large Language Models in Stance Detection with Calibration</i> . Preprint.	Jun. 2023-Jan. 2024
---	---------------------

Motivation: Large Language Models (LLMs) in stance detection tasks may exhibit bias due to false clues and target preferences. We aim to correct this bias.

Method: We designed a novel gated calibration network to mitigate biases in LLMs' stance reasoning outcomes. Additionally, to make the calibration more accurate and generalized, we constructed counterfactual augmented data to correct stance bias, enhancing generalizability.

Results: Results on two stance detection tasks show that our gated calibration network effectively reduces the biases in LLMs, improving stance detection performance.

INTERNSHIP

Research Assistant, Chinese University of Hong Kong	Jun. 2024-Aug. 2024
--	---------------------

Main Task: Enhance the reasoning capability of large language models by synthesizing extensive data through knowledge graph and fine-tuning the models.

Method: Starting from first-order logic, we use Wikidata's knowledge graph to construct a logical reasoning schema. We then traverse the knowledge graph based on this schema to match data. Finally, we train the model to generate QA pairs from the matched data. These generated QA pairs are used to fine-tune the large language model.

Speech and Semantics Engineer, Konka AIOT Lab	Feb. 2022-Aug. 2022
--	---------------------

Main Task: Optimize intelligent customer service to improve response accuracy, shorten response time, and reduce memory usage.

Method: We developed a multi-layer interception framework using the Roformer-sim model and a feature-based matching structure, supervised with the CoSENT loss function. To shorten response times, we used Faiss for vector retrieval optimization and deployed the model with ONNX.

Results: Compared to the previous system version, response accuracy increased by 2%, conversation interception rate by 5%, system memory usage decreased by 30%, and response time was reduced by 80%. This version has been launched in the Konka customer service WeChat mini-program.

HONORS & AWARDS

Awards

- China College Student Mathematics Modeling Competition, National First Prize 2021
- LanQiao Programming Competition, Provincial Second Prize 2021
- Outstanding Graduate of North China Electric Power University 2022
- "Hundred Excellent" Undergraduate Graduation Thesis Award 2022

Scholarship

- First Prize Scholarship of North China Electric Power University 2018, 2019, 2020, 2021
- National Encouragement Scholarship of North China Electric Power University 2021
- Second Prize Scholarship of Harbin Institute of Technology (Shenzhen) 2022
- First Prize Scholarship of Harbin Institute of Technology (Shenzhen) 2023