

# JUNZHUO LI

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## EDUCATION

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**Tianjin University**, Tianjin, China

Sept.2021 –Jan.2024 (Expected)

*Master* of Computer Technology

Adviser: Prof. Deyi Xiong

Thesis Topic: Conversational Question Answering Based on Large-Scale Knowledge Bases

IELTS: 6.5 (overall), R: 6.5, L: 6.0, W: 6.5, S: 6.0 (Apr. 2023)

**Zhengzhou University**, Henan, China

Sept.2017 –Jul.2021

*B.E.* in Computer Science and Technology

Rank: 21 / 175 Overall GPA:3.56 / 4 (Major GPA:3.75 / 4)

## PUBLICATION

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- **Junzhuo Li** and Deyi Xiong. KaFSP: Knowledge-Aware Fuzzy Semantic Parsing for Conversational Question Answering over a Large-Scale Knowledge Base. ACL2022 (Long Paper).
- Chuang Liu, **Junzhuo Li** and Deyi Xiong. Tab-CQA: A Tabular Conversational Question Answering Dataset on Financial Reports. ACL2023 (Industry Track).
- Xinwei Wu, **Junzhuo Li**, Minghui Xu, Weilong Dong, Shuangzhi Wu, Chao Bian, and Deyi Xiong. DEPN: Detecting and Editing Privacy Neurons in Pretrained Language Models. EMNLP2023 (Long Paper).
- Shaoyang Xu, **Junzhuo Li**, and Deyi Xiong. Language Representation Projection: Can We Transfer Factual Knowledge across Languages in Multilingual Language Models? EMNLP2023 (Short Paper).

## RESEARCH PROJECT

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**Conversational Question Answering over Large-scale Knowledge Bases** May.2021 – Dec.2021

- Identified gaps in existing semantic parsing approaches for conversational question answering: insufficient grammar actions for handling uncertain reasoning and suboptimal usage of knowledge base information.
- Introduced fuzzy comparison operations into the grammar system to better handle uncertain reasoning, leveraging fuzzy set theory.
- Developed a knowledge-aware entity disambiguation module that incorporates entity triples from the knowledge base to improve semantic parsing.
- Proposed a multi-label classification framework to capture correlations between entity types and relations and to detect relevant knowledge base information for the current utterance.
- Conducted experiments on a large-scale conversational question answering benchmark, achieving significant improvements over existing state-of-the-art models. Specifically, set new SOTA results on 8 out of 10 question types and improved overall F1 from 83.01% to 85.33%.

**Privacy Leakage of Large Language Models**

Oct.2022 – May.2023

- Introduced a novel method, the privacy neuron detector, to identify neurons within the model that are associated with private information.
- Edited these identified privacy neurons by setting their activations to zero to secure the model against data leakage.
- Developed a privacy neuron aggregator for batch processing to dememorize private information. Conducted extensive experiments that demonstrate the method can effectively reduce data leakage without compromising model performance.
- Provided empirical evidence to illuminate the relationship between model memorization and privacy neurons, considering factors such as model size, training time, and prompt variations.

## Cross-Lingual Knowledge Transfer of Language Models

Feb.2022 – May.2023

- Introduced LRP2 modules to convert non-English language representations into English-like equivalents and revert them back to their original form.
- Conducted experiments on the mLAMA dataset, demonstrating significant improvements in factual knowledge retrieval accuracy across multiple non-English languages.
- Investigated the presence of 'knowledge neurons' that are shared across multiple languages in multilingual pretrained language models.
- Addressed the existing performance gap in factual knowledge probing between high-resource and low-resource languages.

## INTERNSHIP

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**Lark AI**, Bytedance. Inc, China

Jan.2022 – Sept.2022

*NLP Algorithm Intern* Adviser: Dr. Suangzhi Wu

**Research Topic:** Data Privacy Protection Method for Knowledge Distillation

- Conducted research on data privacy protection for large-scale pre-trained language models
- Investigated cross-party learning methods that avoid privacy breaches
- Conducted experiments to prove that current fine-tuning and knowledge distillation methods have the risk of privacy leakage
- Designed methods with dynamic temperature and soft target protection that can significantly reduce the risk of privacy leakage while achieving results comparable to common knowledge distillation methods
- Collaborated with a team of researchers to publish research findings in academic journals and conferences

## HONORS AND AWARDS

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- Merit Students of Tianjin University Sept. 2022
- *1<sup>st</sup> Prize*, Scholarship of TJU (Top **10%**) Sept. 2021 & 2022
- *2<sup>nd</sup> Prize*, China Undergraduate Mathematical Contest in Modeling Sept. 2019
- *1<sup>st</sup> Prize*, Scholarship of ZZU (Top **5%**, continued 3 years) Sept. 2018- Jun. 2021

## PROGRAMMING SKILLS

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- Programming Languages: C/C++, Python, Shell
- Deep Learning Framework : PyTorch, Tensorflow