Dingjie Song

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Education

- **Nanjing University** — Nanjing, China
  Master of Software Engineering — *09/2021 - Present*
  Courses: *Natural Language Processing, Advanced Machine Learning, Cloud Computing, Pattern Recognition*

- **Nanjing University** — Nanjing, China
  Bachelor of Software Engineering; GPA: 4.25/5.0 — *09/2017 - 06/2021*
  Courses: *Operating Systems, Data Structures, Databases, Machine Learning, Data Science Systems*

Skills Summary

- **Languages**:   Python, Java, JavaScript, SQL
- **Frameworks & Tools**:   Pytorch, Tensorflow, AllenNLP

Research Interest

Natural Language Processing and Deep Learning. More specifically, I am currently interested in building conversational agent that can be rapidly deployed in low-resource scenarios (e.g., a new business domain). My current research focuses on the user intent understanding component, which involves studies in few-shot learning, contrastive learning, and prompt learning.

Publications & Papers in Preparation

- Pengfei Sun, Yawen Ouyang, Dingjie Song, and Xinyu Dai, Self-Supervised Task Augmentation for Few-Shot Intent Detection, in *Journal of Computer Science and Technology (**JCST**)*, 2022.

- Ran Wang, Kun Tao, Dingjie Song, Zhilong Zhang, Xiao Ma, Xi'ao Su, and Xinyu Dai, R3: A Reading Comprehension Benchmark Requiring Reasoning Processes, *arXiv preprint arXiv: 2004.01251*, 2020.

Projects

- **Low-resource Spoken Language Understanding**:
  Meta-learning is a promising technique to tackle few-shot intent detection problem. However, the existing meta-learning models will easily overfit when the meta-training tasks are insufficient. We propose a novel self-supervised task augmentation with meta-learning framework to overcome this challenge. We use static (back translation) and dynamic (dropout) augmentation strategies to generate meta-training tasks. Then we incorporate the task consistency loss and the contrastive loss to learn more generalized and transferable features. Experimental results show that our framework achieves SOTA on four datasets. *I involved in the training strategy design, the experiments and the paper writing.*
  Tech: Data Augmentation, Meta Learning, Self-supervised Learning. (07/2021 - 12/2021)

  (Work in progress) Existing zero-shot intent detection methods do not generalize well to few-shot settings and vice versa. We aim to propose an unified intent detection model in low-resource scenarios, i.e. zero-shot intent detection and few-shot intent detection. (01/2022 - Present)

- **Discrete Reasoning Reading Comprehension**:
  We propose a novel task of reading comprehension, in which a model is required to provide final answers and reasoning processes. We introduce a formalism for reasoning over unstructured text, namely *Text Reasoning Meaning Representation (TRMR)*. Moreover, we release the R3 dataset, a **R**eading comprehension benchmark **R**equiring **R**easoning processes. R3 contains over 60K pairs of question-answer pairs and their TRMRs. *I involved in the TRMR design and developed an annotation platform to facilitate the annotation process.*
  Tech: Seq2Seq, Pointer Network, Vue(JavaScript), SpringBoot(Java). (01/2020 - 04/2020)

- **iCountry: An innovative service platform for agricultural finance based on trustworthy big data and artificial intelligence**: As the head of algorithm group, I was responsible for the core financial credit assessment algorithm design. Moreover, we designed facial emotion recognition algorithms for embedded devices, using facial micro-expressions to predict the identity of people and the likelihood of fraud, using ResNet to extract key features of facial expressions and make predictions with an accuracy of 98% or more on the real business data.
  Tech: DNN, ResNet, Facial Expression Recognition (07/2019 - 12/2019)

Honors and Awards

- The People's Scholarship in China - 2018,2019,2020,2021
- Outstanding Student Leader of the Communist Youth League of Nanjing University (as Leader of the Science and Technology Association of the college) - 2018,2019
- Third Runner's Up in *15th Citi Cup Financial Innovation Application Competition* - 12/2019
- Second Runner's Up in *2019 "Chain to Future" University Blockchain Technology Application Competition* (2nd place, organized by the China Computer Federation (CCF)) - 06/2019
- 9th Place in *VIVO-Hackathon* programming competition (Top 6%) - 05/2019