Zhenqiao Song

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Education

Fudan University **Shanghai, China**
Sep. 2017-Jun. 2020

- M.S. in Computer Science. Advisor: Prof. Xiaoqing Zheng

Xiamen University **Xiamen, China**
Sep. 2013-Jun. 2017

- B.S. in Computer Science. Advisor: Prof. Jinsong Su

Research Interests

My research interests lie in the general area of natural language processing. I used to study applications on **generative modeling** and **cross-lingual representation learning**. Currently, I focus on **efficient generative modeling**, *e.g.*, multilingual text generation and parallel multilingual translation.

Research Experience

Bytedance AI lab **Shanghai, China**
Researcher and Engineer advised by Dr. Hao Zhou and Dr. Lei Li, MLNLC team. *Jun. 2019- Now*

- Works on learning efficient neural generative models on large-scale discrete and unstructured data
  - **Parallel Multilingual Translation via Contextualized Self Switching**
    - Propose **a non-autoregressive multilingual neural machine tarnslation model**, which simultaneously learns aligned cross-lingual representations and a better parallel multilingual translation model.
    - Outpeform multilingual transformer on all datasets with a 6.1x faster decoding speed in inference.
  - **Multilingual Natural Language Generation via Large-scale Pretraining**
    - **Pretrain a multilingual transformer** with large-scale parallel and monolingual data, which performs well in many downstream tasks and scenarios.
    - **Pretrain a multilingual parallel generation model** with large-scale parallel data, which performs competitively with mBART.
  - **Triangular Bidword Generation for Sponsored Search Auction**
    - Propose **a triangular generation model**, which takes the high-quality data of paired <query, Ad> as a supervision signal to indirectly guide the bidword generation from both Ad and query in the triangle.
    - Bidwords generated in the triangular training framework are more relevant and diverse than those by Transformer.

Shanghai Key Laboratory of Intelligent Information Processing **Shanghai, China**
Student Researcher advised by Prof. Xiaoqing Zheng *Sep. 2017-Jun. 2020*

- Worked on text generation and cross-lingual representation learning
  - **Generating responses with a specific emotion in dialog**
    - Propose an emotional dialogue system (EmoDS) that can generate the meaningful responses with a coherent structure for a post, and meanwhile express the desired emotion explicitly or implicitly.
    - Experimental results show that the proposed model can generate more relevant, diverse and emotional reponses than baselines.
  - **Jointly Learning Bilingual Word Embeddings and Alignments**
    - Propose a method to learn bilingual word embeddings and alignments jointly, in which both the tasks are reinforced mutually and can benefit from each other.
    - Embeddings produced by this method perform well in many downstream tasks, such as bilingual word induction, cross-lingual document classification and alignment error rate.

Laboratory of Information Processing and Intelligent Control **Xiamen, China**
Sep. 2013-Jun. 2017

Student Researcher advised by Prof. Jinsong Su

- Worked on cross-lingual representation learning and statistical machine translation
  - **Exploring Implicit Semantic Constraints for Bilingual Word Embeddings**
    - Propose a method to exploit implicit constraints into learning bilingual word embeddings.
    - Embeddings learned by this method significantly improve the statistical machine translation performance.

Publications

[1] **Zhenqiao Song**, Xiaoqing Zheng, Lu Liu, Mu Xu, and Xuan-Jing Huang. "Generating responses with a specific emotion in dialog". In: *Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics* (***ACL***). 2019, pp. 3685–3695.

[2] **Zhenqiao Song**, Jiaze Chen, Hao Zhou, and Lei Li. "Triangular Bidword Generation for Sponsored Search Auction". In: *Proceedings of the 14th ACM International Conference on Web Search and Data Mining* (***WSDM***). 2021, pp. 707–715.

[3] **Zhenqiao Song**, Hao Zhou, Jingjing Xu, Lihua Qian, and Lei Li. "Non-Autoregressive Models are Better Multilingual Translators". In: *Submitted to ICLR 2022*.

[4] **Zhenqiao Song**, Xiaoqing Zheng, and Xuanjing Huang. "Jointly Learning Bilingual Word Embeddings and Alignments". In: *Journal of Machine translation* (2021).

[5] Jinsong Su, **Zhenqiao Song**, Yaojie Lu, Mu Xu, Changxing Wu, and Yidong Chen. "Exploring Implicit Semantic Constraints for Bilingual Word Embeddings". In: *Neural Processing Letters* 48.2 (2018), pp. 1073–1088.

[6] Yiran Chen, **Zhenqiao Song**, Xianze Wu, Danqing Wang, Jingjing Xu, Jiaze Chen, Hao Zhou, and Lei Li. "MTG: A Benchmarking Suite for Multilingual Text Generation". In: *arXiv preprint arXiv:2108.07140* (2021).

[7] Lu Liu, **Zhenqiao Song**, and Xiaoqing Zheng. "Improving Coreference Resolution by Leveraging Entity-Centric Features with Graph Neural Networks and Second-order Inference". In: *arXiv preprint arXiv:2009.04639* (2020).

Honors and Awards

- **National Scholarship**. 2020
- **Shanghai Outstanding Graduate**. 2020
- **Fudan University Excellent Scholarship**. 2017&2018&2019
- **Xiamen University Excellent Scholarship**. 2013-2017

Academic Services

- **Conference Reviewer**: ACL 2020, EMNLP 2020

Teaching

- **Teaching Assistant** at Fudan University: Data Structures and Algorithms; Linear Algebra

Skill Set

- **Machine Learning API:** Tensorflow, Pytorch