Tianjian Li

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EDUCATION

- **Johns Hopkins University**
  M.S.E. in Computer Science
  Baltimore, MD
  Aug 2022 - Present

- **New York University**
  B.A. in Computer Science/Mathematics
  New York, NY
  Aug 2017 - Sept 2021

RESEARCH EXPERIENCE

- **Johns Hopkins University - Center for Language and Speech Processing (CLSP)**
  Advisor: Kenton Murray and Philipp Koehn
  Baltimore, MD
  Sept 2022 - Present
  - **Improving Robustness of Text Generation Models**: Proposed a method to overcome the limitations of using model's output probabilities to estimate data quality during training.
  - **Parameter Importance Guided Optimization**: Proposed a unified view of methods that harnesses importance of individual parameters. Designed a novel parameter importance guided optimizer that achieve comparable performance with a $2.4 \times$ speed boost.
  - **Cross-lingual Transfer in Language Generation**: Carried out analysis of why cross-lingual transfer works for text classification but fails in generation. We found that multilingual LMs transfers supervision from language to another by increasing their representation similarity, which is beneficial for classification but harmful for generation.

- **Tsinghua University - Knowledge Engineering Group (KEG)**
  Advisor: Jie Tang
  Beijing, China
  Mar 2022 - Aug 2022
  - **Multilingual LM Pre-training**: Trained and open-sourced a multilingual language model with 1B parameters based on a novel autoregressive blank infilling objective. Our model supports both fine-tuning for Natural Language Understanding tasks and conditional/unconditional generation tasks.
  - **Cross-Lingual Summarizer**: Collected multilingual summarization data across different domains and fine-tuned our multilingual model to perform cross-lingual summarization in any language.

PUBLICATIONS

- **Tianjian Li**, Haoran Xu, Philipp Koehn and Kenton Murray: *Efficiently Harnessing Parameter Importance for Better Training.* Under Review at NeurIPS 2023. Link

- **Tianjian Li** and Kenton Murray: *Why Does Zero-Shot Cross-Lingual Generation Fail? An Explanation and a Solution.* In Findings of ACL 2023. Link

- Shuyue Stella Li, Cihan Xiao, **Tianjian Li**, Bismarck Odoom: *Simple yet Effective Code-Switching Language Identification with Multitask Pre-Training and Transfer Learning.* arxiv preprint. Link

INDUSTRIAL EXPERIENCE

- **Baidu Inc.**
  Machine Learning Engineer - Intern
  Beijing, China
  Aug 2021 - Feb 2022
  - Built a classification model on the influence of small paths on customers' driving experience with XGBoost.
  - Optimized route ranking model by experimenting with two strategies: 1D-CNN and multi-head self-attention in modeling sequential trajectory data.
  - Designed a Spatial-Temporal Graph Neural Network model further to improve the performance of the route ranking model to anticipate and dodge traffic jams. Reimplemented STGCN (IJCAI '18) and STFGNN (AAAI '21) in PaddlePaddle (Baidu's DL Framework).

HONORS, AWARDS AND SERVICES

- Reviewer: ACL 2023, EMNLP 2023

- New York University College of Arts and Sciences (CAS) Scholarship 2020

- First Prize in National Olympiad in Informatics Provincial (NOIP)

SKILLS SUMMARY

- **Programming Languages**:   Python, Java, C/C++, SQL, JavaScript, Shell Scripting, Unix Commands(grep, sed)

- **Frameworks**:   PyTorch (Distributed Training), TensorFlow, Keras, PaddlePaddle, Huggingface, Fairseq

- **Tools**:   Docker, git, Hadoop streaming, Spark, Vim, LaTeX

- **Spoken Languages:**:   Chinese (Native), English, French