Tianjian Li

Github: github.com/tianjianl
Webpage: github.com/tianjianl

Email: tli104@jhu.edu
Mobile: +1-(667)7709373

Education

- **Johns Hopkins University** — Baltimore, MD
  M.S.E. in Computer Science — GPA: 3.95/4.0 — *August 2022 - May 2024*
- **New York University** — New York, NY
  B.A. in Computer Science/Mathematics — *August 2017 - September 2021*

Courses: *Operating Systems, Data Structures, Basic Algorithms, Machine Learning, Theory of Computation, Numerical Analysis*

Research Experience

- **Johns Hopkins University - Center for Speech and Language Processing (CLSP)** — Baltimore, MD
  Advisor: Kenton Murray and Philipp Koehn — *Sept 2022 - Present*
  - **Cross-lingual Transfer**: Worked on understanding zero-shot cross-lingual transfer in natural language generation.
  - **Machine Translation**: Investigated gradient optimization techniques in Multilingual Neural Machine Translation.
- **Tsinghua University - Knowledge Engineering Group (KEG)** — Beijing, China
  Advisor: Jie Tang — *Mar 2022 - Aug 2022*
  - **Multilingual Language Model 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.
  - **Neural Cross-Lingual Summarizer**: Fine-tuned our multilingual model to perform cross-lingual summarization in any language.

Publications

- **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.** — Beijing, China
  Machine Learning Engineer - Intern — *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.

Projects

- **Baidu AI Studio Regular Challenge 8/1035 (Machine Learning, Graph Neural Networks)**: Implemented Graph Convolution Networks with residual connection and label smoothing for academic paper classification contest. Rank 8 out of 1035 teams. Project Link
- **Re-implementation of STFGNN model for traffic jam forecasting (Machine Learning, Spatio-Temporal Graph Neural Networks)**: Re-implemented STFGNN model in PaddlePaddle, modified model architecture to achieve an accuracy of over 80% in forecasting the time and severity of traffic jam in the next 48 hours. Project Link

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

- **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, MySQL, Hadoop streaming, Spark, Vim, LaTeX