Ne Luo

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EDUCATION

University of Edinburgh — Edinburgh, UK
M.Sc. in Speech and Language Processing, with Distinction — Sep 2023 – Nov 2024
- Thesis: Neuro-Symbolic Large Language Models / Teaching LLMs to Use Tools
- Supervisor: Dr. Pasquale Minervini

Beijing Forestry University — Beijing, China
B.Eng. in Computer Science and Technology — Sep 2015 – Jun 2019

RESEARCH EXPERIENCE

EdinburghNLP — Edinburgh, UK
MSc Student -> Research Collaborator — Mar 2024 – Current
- Project: led research on self-training methods for teaching large language models (LLMs) to use tools without human demonstrations. This work proposes a novel approach that synthesises tool-use datasets via the LLM itself, and explores fine-tuning the LLM with the curated datasets, leveraging supervised fine-tuning and preference fine-tuning techniques.
- Supervisor: Dr. Pasquale Minervini

PUBLICATIONS

[1] **Ne Luo**, Aryo Pradipta Gema, Xuanli He, Emile van Krieken, Pietro Lesci, Pasquale Minervini, "Self-Training Large Language Models for Tool-Use Without Demonstrations," In Findings of the Association for Computational Linguistics: NAACL 2025.

[2] Tingwei Guo, Cheng Wen, Dongwei Jiang, **Ne Luo**, Ruixiong Zhang, Shuaijiang Zhao, Wubo Li, Cheng Gong, Wei Zou, Kun Han, Xiangang Li, "DiDiSpeech: A Large Scale Mandarin Speech Corpus," In IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2021.

[3] Dongwei Jiang, Wubo Li, Ruixiong Zhang, Miao Cao, **Ne Luo**, Yang Han, Wei Zou, Xiangang Li, "A Further Study of Unsupervised Pre-training for Transformer Based Speech Recognition," In IEEE International Conference on Acoustics, Speech and Signal Processing, ICASSP 2021.

[4] Ke Ding, **Ne Luo**, Yanyan Xu, Dengfeng Ke, Kaile Su, "Mutual-optimization Towards Generative Adversarial Networks For Robust Speech Recognition," In International Conference on Pattern Recognition, ICPR 2018.

PROFESSIONAL EXPERIENCE

DiDi Global Inc. — Beijing & Hangzhou, China
Algorithm Engineer -> Senior Algorithm Engineer — Jul 2019 – Apr 2022
- Speech Recognition Systems for In-vehicle Voice Assistants
  - Trained CTC, Attention, and Transformer-based acoustic models with large-scale data, achieving 90%+ character accuracies on multiple test sets.
  - Developed a syllable-based acoustic model that achieved an absolute improvement of 1% in character accuracy (93% -> 94%) while reducing real-time factor by 60%.
  - Mentored new graduates and interns.
- Athena (An open-source speech processing project with 900+ stars on GitHub)
  - Trained Transformer-based models with various methods (unsupervised pre-training, multi-task learning, etc), reducing error rates to 16.8% (TIMIT) and 8.5% (Switchboard).
  - Implemented task-specific data modules, model, metrics, and losses for speaker recognition.
  - Implemented deployment code in Python and C++ for speech recognition and synthesis systems.
- Multi-Speaker Speech Synthesis: trained multi-speaker speech synthesis model (based on Tacotron-2), audio samples on DiDiSpeech dataset are available.

Algorithm Intern — Jul 2018 – Jan 2019, Apr 2019 – Jun 2019
- Code-Switching Speech Recognition: implemented an end-to-end Chinese and English code-switching speech recognition system based on TensorFlow, and optimised its performance on SEAME dataset.
- Dialect Speech Recognition: trained Attention-based speech recognition system for Chinese dialects (e.g., Sichuanese, Cantonese).

PATENTS

[1] **Ne Luo**, Shuaijiang Zhao, Xi Zhao, "Speech recognition apparatus, method, electronic device, and computer-readable storage medium," CN111862944B. Assignee: Beijing DiDi Infinity Technology and Development Co., Ltd.

[2] Jianwei Sun, Xi Zhao, **Ne Luo**, Fei Wang, "Information interaction method and device and electronic equipment," CN113011198B. Assignee: Beijing DiDi Infinity Technology and Development Co., Ltd.

[3] Shuaijiang Zhao, Xi Zhao, **Ne Luo**, Cheng Wen, Tingwei Guo, "Speech synthesis processing method, device, equipment and storage medium," CN112071301B. Assignee: Beijing DiDi Infinity Technology and Development Co., Ltd.

[4] **Ne Luo**, Shuaijiang Zhao, Dongwei Jiang, Caixia Gong, Wei Zou, "Voice recognition method and device, electronic equipment and storage medium," CN110797016B. Assignee: Beijing DiDi Infinity Technology and Development Co., Ltd.

AWARDS & SCHOLARSHIPS

- Academic Excellence Scholarship, Beijing Forestry University 2018
- Excellent Intern Award, DiDi AI Labs 2018
- Momenta Enterprise Award, Peking University Hackathon 2017

COURSE CERTIFICATIONS

- Mathematics for Machine Learning: Linear Algebra
- Mathematics for Machine Learning: Multivariate Calculus
- Neural Networks and Deep Learning
- Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization
- Structuring Machine Learning Projects

SKILLS

- Programming Languages & Frameworks: Python, Shell, C/C++, PyTorch, TensorFlow, LaTeX.
- Language Proficiency: Chinese (native), English (fluent).
- IELTS Academic: Overall 8.0 (Listening 8.0 / Reading 9.0 / Writing 7.5 / Speaking 6.5).

[*CV compiled on 2025-04-22*]