JIATAO GU

Ph.D.

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RESEARCH INTEREST

Natural Language Processing, Efficient Models, Multi-model Learning, Representation Learning

EDUCATION

Ph.D. in Electrical and Electronic Engineering

The University of Hong Kong

Sept. 2014 – Aug. 2018 Hong Kong, China

- Supervised by Prof. *Victor O.K. Li*, Chair Professor of Information Engineering, HKU
- Hong Kong PhD Fellowship (HKPF) holder (Top 100 PhD students in Hong Kong).
- Dissertation: *Efficient Neural Machine Translation*.

B.S. in Electronic Engineering

Tsinghua University

Sept. 2010 – Jul. 2014 Beijing, China

- GPA: 3.76, Rank: 18/243
- Dissertation: *A Compositional Semantic Distributed Model and its application on Text Summarization.*

Exchange Student Program

The University of Tokyo

Oct. 2012 – Mar. 2013 Tokyo, Japan

EXPERIENCE

Machine Learning Researcher

Machine Learning Research (MLR), Apple Inc.,

June. 2022 – Now New York City, NY, USA

- Manager: *Josh Susskind*, Research Scientist Manager
- Research on advanced techniques for improving representation learning and generative models

Research Scientist

Facebook AI Research (FAIR), Meta Platforms, Inc.,

Aug. 2018 – June. 2022 New York City, NY, USA

- Manager: *Y-Lan Boureau*, Research Scientist Leader
- Research on advanced techniques for improving NLP and other deep learning applications

Research Intern

Salesforce Research (MetaMind), Salesforce Inc.

Sept. 2017 – Dec. 2017 Palo Alto, CA, USA

- Adviser: *Richard Socher*, Chief Scientist
- Research on Non-autoregressive decoding of neural machine translation

Research Intern

Microsoft AI & Research, Microsoft Corporation

Apr. 2017 – Aug. 2017 | Redmond, WA, USA

- Adviser: *Awadalla Hany Hassan*, Principal NLP Scientist
- Research on transfer learning for Zero-Resource neural machine translation

Visiting Scholar

CILVR Group, Courant Institute of Mathematical Sciences, New York University

Jun. 2016 – Jan. 2017 | New York, NY, USA

- Adviser: *Kyunghyun Cho*, Assistant Professor, CIFAR Azrieli Global Scholar
- Research on trainable decoding for neural machine translation with reinforcement learning.

Student Collaborator

Noah's Ark Lab, Huawei Technologies

Sept. 2015 – Jun. 2016 | Hong Kong, China

- Adviser: *Zhengdong Lu*, Senior Researcher (now CTO of deeplycurious.ai)
- Research on neural symbolic behaviors in NLP.

Student Research Training (SRT)

Tsinghua-iFlyTek Joint Laboratory for Speech Technologies, Tsinghua University & iFlyTek China.

Apr. 2013 – Sept. 2013 | Beijing, China

- Adviser: *Ji Wu*, Associate Professor
- Research on extractive summarization and language modeling.

Exchange Student Lab Research

IBA Lab, Graduate School of Information Science and Technology, The University of Tokyo

Oct. 2012 – Mar. 2013 | Tokyo, Japan

- Adviser: *Hitoshi Iba*, Professor
- Research on simple compositional methods for distributed and co-occurrence lexical patterns.

PROFESSIONAL ACTIVITIES

Teaching

- Teaching Assistant, ELEC 2501/3541 S/W Engineering and O.S., HKU — Spring, 2015
- Teaching Assistant, ELEC 3226/3442 Embedded System, HKU — Spring, 2016
- Teaching Assistant, ELEC 3641 Human computer interaction, HKU — Spring, 2018

Organizer

IWSLT 2020 (Simultaneous Speech Translation Task)

Area Chair

ACL Rolling Review | ACL 2021 | EMNLP 2020 | NLPCC 2020

Reviewer (# of paper reviewed)

ACL 2017 (1) | IJCNLP 2017 (2) | AAAI 2018 (8) | NAACL 2018 (1) | WNMT 2018 (2) | EMNLP 2018 (5) Best Reviewer Award | NeurIPS 2019 (5) | ICML 2019 (1) | ICLR 2019 (4) | ACL 2019 (5) | EMNLP 2019 (3) | NeurIPS 2019 (3) | ICLR 2020 (4) | NeurIPS 2021 (8) | CVPR 2022 (5)

Invited Talk

- **StyleNeRF:A style-based 3d-aware generator for high-resolution image synthesis**
  - VALSE Webinar, virtual talk — Dec. 29, 2021
- **Multilingual Denoising Pre-training for Neural Machine Translation**
  - Google Translate, virtual talk — Jul. 17, 2020
  - ACL2020 WNGT Workshop, virtual talk — Jul. 10, 2020
- **Understanding Knowledge Distillation in Neural Sequence Generation**
  - Tsinghua University, Beijing, China — Jan. 03, 2020
  - Microsoft Translate, Redmond, WA, USA — Dec. 04, 2019
- **Non-autoregressive Neural Machine Translation**
  - New York University, New York, NY, USA — Dec. 19, 2017
  - Google Brain, Mountain View, CA, USA — Nov. 20, 2017
- **Learning to Share: towards Zero-Resource Neural Machine Translation without Pivots**
  - Microsoft Research, Redmond, WA, USA — Jul. 27, 2017
- **Trainable Decoding for Neural Machine Translation**
  - NYU Shanghai, Shanghai, China — Apr. 14, 2017
- **Learning to Translate in Real-time with Neural Machine Translation**
  - Carnegie Mellon University, Pittsburgh, PA, USA — Oct. 27, 2016
  - New York University, New York, NY, USA — Oct. 19, 2016

MEDIA COVERAGE

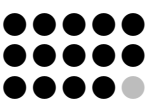
- Reports mentioned **Data2vec**
  - `https://bit.ly/3Gr3Vhq` (MIT Technology Review)
- Reports mentioned **StyleNeRF: A 3D-Aware Generator for High-Resolution Image Synthesis**
  - `https://bit.ly/35OeT49` (SyncedReview)
- Reports mentioned **Multilingual Fine-tuning of Extensible Multilingual Pretraining**
  - `https://bit.ly/3gpt01I` (Towards data science)
- Reports mentioned **Multilingual Denoising Pre-training for Neural Machine Translation**
  - `https://bit.ly/3L8VpHp` (SyncedReview)
- Reports mentioned **Levenshtein Transformer**
  - `https://zd.net/3sdVEIN` (ZDNET)
- Reports on **Non-Autoregressive Neural Machine Translation**
  - `https://cnb.cx/3siXyHV` (CNBC)
  - `https://bit.ly/3GqC4hw` (VentureBeat)
- Reports on **Learning to Translate in Real-time with Neural Machine Translation**
  - `https://bit.ly/3sgr5SL` (Slator)

HONORS & AWARDS

- IEEE CI HK FYP Competition and Graduate Student Paper Competition 2015/16, 2nd Runner-up — 2016
- HKPFS 2014/15 (Hong Kong PhD Fellowship Scheme) Award — 2014
- CSC Scholarship for Excellent Undergraduate Exchange Program — 2012
- National Endeavor Scholarship Award — 2013, 2012, 2011

LANGUAGES

English
Chinese
Japanese



LIST OF PUBLICATIONS

*=equal contribution

CONFERENCES

[1] **Jiatao Gu**, Lingjie Liu, Peng Wang, and Christian Theobalt. "StyleNeRF: A Style-based 3D-Aware Generator for High-resolution Image Synthesis". In: ICLR. 2022.

[2] **Jiatao Gu*** and Xiang Kong*. "Fully Non-autoregressive Neural Machine Translation: Tricks of the Trade". In: ACL Findings. 2021.

[3] Xiang Kong, Adithya Renduchintala, James Cross, Yuqing Tang, **Jiatao Gu**, and Xian Li. "Multilingual Neural Machine Translation with Deep Encoder and Multiple Shallow Decoders". In: *EACL*. 2021, pp. 1613–1624.

[4] Lingjie Liu, Marc Habermann, Viktor Rudnev, Kripasindhu Sarkar, **Jiatao Gu**, and Christian Theobalt. "Neural Actor: Neural Free-view Synthesis of Human Actors with Pose Control". In: *SIGGRAPH ASIA*. 2021.

[5] Jiajun Shen, Peng-Jen Chen, Matt Le, Junxian He, **Jiatao Gu**, Myle Ott, Michael Auli, and Marc'Aurelio Ranzato. "The source-target domain mismatch problem in machine translation". In: EACL. 2021.

[6] Yuqing Tang, Chau Tran, Xian Li, Peng-Jen Chen, Naman Goyal, Vishrav Chaudhary, **Jiatao Gu**, and Angela Fan. "Multilingual translation with extensible multilingual pretraining and finetuning". In: ACL Findings. 2021.

[7] Changhan Wang, Wei-Ning Hsu, Yossi Adi, Adam Polyak, Ann Lee, Peng-Jen Chen, **Jiatao Gu**, and Juan Pino. "fairseq S^ 2: A Scalable and Integrable Speech Synthesis Toolkit". In: EMNLP Demo track. 2021.

[8] Lior Yariv, **Jiatao Gu**, Yoni Kasten, and Yaron Lipman. "Volume rendering of neural implicit surfaces". In: *NeurIPS*. (oral). 2021.

[9] Chunting Zhou, **Jiatao Gu**, Mona Diab, Paco Guzman, Luke Zettlemoyer, and Marjan Ghazvininejad. "Detecting Hallucinated Content in Conditional Neural Sequence Generation". In: ACL Findings. 2021.

[10] Maha Elbayad, **Jiatao Gu**, Edouard Grave, and Michael Auli. "Depth-adaptive transformer". In: 2020.

[11] Junxian He*, **Jiatao Gu***, Jiajun Shen, and Marc'Aurelio Ranzato. "Revisiting self-training for neural sequence generation". In: *ICLR*. 2020.

[12] Jungo Kasai, James Cross, Marjan Ghazvininejad, and **Jiatao Gu**. "Non-autoregressive machine translation with disentangled context transformer". In: *ICML*. PMLR. 2020, pp. 5144–5155.

[13] Hang Le, Juan Pino, Changhan Wang, **Jiatao Gu**, Didier Schwab, and Laurent Besacier. "Dual-decoder Transformer for Joint Automatic Speech Recognition and Multilingual Speech Translation". In: COLING. 2020.

[14] Lingjie Liu*, **Jiatao Gu***, Kyaw Zaw Lin, Tat-Seng Chua, and Christian Theobalt. "Neural Sparse Voxel Fields". In: *NeurIPS*. vol. 33. (spotlight). 2020.

[15] Xutai Ma, Mohammad Javad Dousti, Changhan Wang, **Jiatao Gu**, and Juan Pino. "Simuleval: An evaluation toolkit for simultaneous translation". In: *EMNLP Demo Track*. 2020.

[16] Xutai Ma, Juan Pino, James Cross, Liezl Puzon, and **Jiatao Gu**. "Monotonic multihead attention". In: *ICLR*. 2020.

[17] Arya D McCarthy, Xian Li, **Jiatao Gu**, and Ning Dong. "Addressing Posterior Collapse with Mutual Information for Improved Variational Neural Machine Translation". In: *ACL*. 2020, pp. 8512–8525.

[18] Chau Tran, Yuqing Tang, Xian Li, and **Jiatao Gu**. "Cross-lingual retrieval for iterative self-supervised training". In: *NeurIPS*. 2020.

[19] Changhan Wang, Kyunghyun Cho, and **Jiatao Gu**. "Neural machine translation with byte-level subwords". In: *AAAI*. vol. 34. 05. 2020, pp. 9154–9160.

[20] Changhan Wang, Juan Pino, and **Jiatao Gu**. "Improving Cross-Lingual Transfer Learning for End-to-End Speech Recognition with Speech Translation". In: *Interspeech*. 2020.

[21] Changhan Wang, Juan Pino, Anne Wu, and **Jiatao Gu**. "Covost: A diverse multilingual speech-to-text translation corpus". In: 2020.

[22] Anne Wu, Changhan Wang, Juan Pino, and **Jiatao Gu**. "Self-supervised representations improve end-to-end speech translation". In: *Interspeech*. 2020.

[23] Saining Xie, **Jiatao Gu**, Demi Guo, Charles R Qi, Leonidas Guibas, and Or Litany. "PointContrast: Unsupervised pre-training for 3D point cloud understanding". In: *ECCV*. Springer, Cham. 2020, pp. 574–591.

[24] Chunting Zhou*, **Jiatao Gu***, and Graham Neubig. "Understanding knowledge distillation in non-autoregressive machine translation". In: *ICLR*. 2020.

[25] **Jiatao Gu**, Changhan Wang, and Jake Zhao. "Levenshtein Transformer". In: *NeurIPS*. 2019.

[26] **Jiatao Gu***, Yong Wang*, Kyunghyun Cho, and Victor OK Li. "Improved Zero-shot Neural Machine Translation via Ignoring Spurious Correlations". In: *ACL*. 2019.

[27] Changhan Wang, Anirudh Jain, Danlu Chen, and **Jiatao Gu**. "VizSeq: A Visual Analysis Toolkit for Text Generation Tasks". In: 2019.

[28] **Jiatao Gu**, James Bradbury, Caiming Xiong, Victor OK Li, and Richard Socher. "Non-Autoregressive Neural Machine Translation". In: *ICLR*. 2018.

[29] **Jiatao Gu**, Hany Hassan, Jacob Devlin, and Victor OK Li. "Universal Neural Machine Translation for Extremely Low Resource Languages". In: *NAACL*. 2018.

[30] **Jiatao Gu**, Daniel Jiwoong Im, and Victor OK Li. "Neural machine translation with gumbel-greedy decoding". In: *AAAI*. 2018.

[31] **Jiatao Gu**, Yong Wang, Yun Chen, Kyunghyun Cho, and Victor OK Li. "Meta-learning for low-resource neural machine translation". In: 2018.

[32] **Jiatao Gu**, Yong Wang, Kyunghyun Cho, and Victor OK Li. "Search Engine Guided Non-Parametric Neural Machine Translation". In: *AAAI*. 2018.

[33] **Jiatao Gu**, Kyunghyun Cho, and Victor OK Li. "Trainable greedy decoding for neural machine translation". In: 2017.

[34] **Jiatao Gu**, Graham Neubig, Kyunghyun Cho, and Victor OK Li. "Learning to translate in real-time with neural machine translation". In: *EACL*. 2017.

[35] Victor O. K. Li, Jacqueline C. K. Lam, Yun Chen, and **Jiatao Gu**. "Deep Learning Model to Estimate Air Pollution Using M-BP to Fill in Missing Proxy Urban Data". In: *GLOBECOM*. 2017.

[36] **Jiatao Gu**, Zhengdong Lu, Hang Li, and Victor OK Li. "Incorporating copying mechanism in sequence-to-sequence learning". In: *ACL*. 2016.

[37] **Jiatao Gu** and Victor OK Li. "Efficient Learning for Undirected Topic Models". In: *ACL Short Paper*. 2015.

JOURNALS

[1] Yinhan Liu*, **Jiatao Gu***, Naman Goyal*, Xian Li, Sergey Edunov, Marjan Ghazvininejad, Mike Lewis, and Luke Zettlemoyer. "Multilingual denoising pre-training for neural machine translation". In: *Transactions of the Association for Computational Linguistics* (2020).

[2] **Jiatao Gu**, Qi Liu, and Kyunghyun Cho. "Insertion-based decoding with automatically inferred generation order". In: *Transactions of the Association for Computational Linguistics* (2019).

[3] JQ James, Wen Yu, and **Jiatao Gu**. "Online vehicle routing with neural combinatorial optimization and deep reinforcement learning". In: *IEEE Transactions on Intelligent Transportation Systems* 20.10 (2019), pp. 3806–3817.

[4] James Jian Qiao Yu and **Jiatao Gu**. "Real-time traffic speed estimation with graph convolutional generative autoencoder". In: *IEEE Transactions on Intelligent Transportation Systems* 20.10 (2019), pp. 3940–3951.

[5] JQ James, David J Hill, Albert YS Lam, **Jiatao Gu**, and Victor OK Li. "Intelligent time-adaptive transient stability assessment system". In: *IEEE Transactions on Power Systems* 33.1 (2017), pp. 1049–1058.

WORKSHOP & PREPRINTS

[1] Alexei Baevski, Wei-Ning Hsu, Qiantong Xu, Arun Babu, **Jiatao Gu**, and Michael Auli. "data2vec: A General Framework for Self-supervised Learning in Speech, Vision and Language". `https://ai.facebook.com/research/data2vec-a-general-framework-for-self-supervised-learning-in-speech-vision-and-language/`. 2022.

[2] Ann Lee, Hongyu Gong, Paul-Ambroise Duquenne, Holger Schwenk, Peng-Jen Chen, Changhan Wang, Sravya Popuri, Juan Pino, **Jiatao Gu**, and Wei-Ning Hsu. "Textless Speech-to-Speech Translation on Real Data". 2021.

[3] Ann Lee, Peng-Jen Chen, Changhan Wang, **Jiatao Gu**, Xutai Ma, Adam Polyak, Yossi Adi, Qing He, Yun Tang, Juan Pino, et al. "Direct speech-to-speech translation with discrete units". arXiv preprint arXiv:2107.05604. 2021.

[4] Ebrahim Ansari, Nguyen Bach, Ondřej Bojar, Roldano Cattoni, Fahim Dalvi, Nadir Durrani, Marcello Federico, Christian Federmann, **Jiatao Gu**, Fei Huang, et al. "Findings of the IWSLT 2020 Evaluation Campaign". Proceedings of the 17th International Conference on Spoken Language Translation. 2020.

[5] Peng-Jen Chen, Ann Lee, Changhan Wang, Naman Goyal, Angela Fan, Mary Williamson, and **Jiatao Gu**. "Facebook AI's WMT20 News Translation Task Submission". arXiv preprint arXiv:2011.08298. 2020.

[6] Zhuofeng Wu, Sinong Wang, **Jiatao Gu**, Madian Khabsa, Fei Sun, and Hao Ma. "CLEAR: Contrastive Learning for Sentence Representation". arXiv preprint arXiv:2012.15466. 2020.

[7] Juan Pino, Liezl Puzon, **Jiatao Gu**, Xutai Ma, Arya D McCarthy, and Deepak Gopinath. "Harnessing indirect training data for end-to-end automatic speech translation: Tricks of the trade". IWSLT. 2019.

[8] Yong Wang, Xiao-Ming Wu, Qimai Li, **Jiatao Gu**, Wangmeng Xiang, Lei Zhang, and Victor OK Li. "Large Margin Meta-Learning for Few-Shot Classification". NeurIPS Meta-learning Workshop. 2018.

[9] **Jiatao Gu**, Baotian Hu, Zhengdong Lu, Hang Li, and Victor OK Li. "Guided Sequence-to-Sequence Learning with External Rule Memory". ICLR Workshop. 2016.