

Brian R. Yan

PhD Student, Language Technologies Institute at Carnegie Mellon University

Brian is working on speech and language processing under the supervision of Dr. Shinji Watanabe. He is interested in building speech translation and multilingual ASR systems with end-to-end neural networks. Before his current work at Carnegie Mellon, Brian was a strategy consultant with a degree in economics and computer science from the University of Chicago.

✉ brianyan918@gmail.com / byan@andrew.cmu.edu

☎ 908-531-9169

🌐 [linkedin.com/in/brian-yan-62ba4980](https://www.linkedin.com/in/brian-yan-62ba4980)

Education

PHD Speech and Language Processing, *Carnegie Mellon University*, 2021-current

MS Artificial Intelligence & Innovation, 3.9/4.0, *Carnegie Mellon University*, 2019-2021

BA Economics with Computer Science Minor, 3.7/4.0, *University of Chicago*, 2012-2016

Recent Projects

Multilingual Speech Recognition, 2020-current

In Progress:

- Designing data-driven acoustic units for multilingual and multi-accented speech recognition
- Automatically identifying phone-phoneme realizations in new languages using allophone graphs

Previously:

- Proposed a conditionally factorized joint modeling approach using RNN-Transducers for recognizing both code-switched and monolingual speech with a single model [1]
- Proposed language-universal ASR for unseen low-resource languages using a shared CTC-based phone recognizer and language-specific differentiable WFST-based phone-phoneme mappings [2]

Speech-to-Text Translation, 2020-current

In Progress:

- Building conversational speech translation systems that are robust to multi-speaker scenarios
- Investigating data augmentation methods for speech translation using text-to-speech synthesis

Previously:

- Best system overall and best system in the end-to-end track in the IWSLT 2020 and 2021 Offline Speech Translation shared task for English to German TED Talk translation [3]
- Achieved state-of-the-art speech translation performance with +6 and +4 BLEU improvements on the Fisher-CallHome and Must-C corpora using our Searchable Hidden Intermediates method [4]

Select Publications

- [1] **Brian Yan**, C. Zhang, M. Yu, S.X. Zhang, S. Dalmia, D. Berrebbi, C. Weng, S. Watanabe, D. Yu, “Joint Modeling of Code-Switched and Monolingual ASR via Conditional Factorization”, *Preprint*
- [2] **Brian Yan**, Siddharth Dalmia, David R. Mortensen, Florian Metze, Shinji Watanabe, “Differentiable Allophone Graphs for Language-Universal Speech Recognition”, INTERSPEECH’21
- [3] Hirofumi Inaguma*, **Brian Yan***, Siddharth Dalmia, Pengcheng Guo, Jiatong Shi, Kevin Duh, Shinji Watanabe, “ESPnet-ST IWSLT 2021 Offline Speech Translation System”, IWSLT’21
- [4] Siddharth Dalmia, **Brian Yan**, Vikas Raunak, Florian Metze, and Shinji Watanabe, “Searchable Hidden Intermediates for End-to-End Models of Decomposable Sequence Tasks,” NAACL’21

Awards & Stipends

James R. Swartz Entrepreneurial Fellow, *Awarded by Carnegie Mellon University*, 2020

- Stipend and mentorship for graduate students demonstrating entrepreneurial potential

All-Conference Student Athlete, *Awarded by the University Athletic Association (UAA)*, 2012-2016

- 4x recipient as a Division III swimmer for high athletic and academic achievement

General Honors in Economics and Dean's List Award, *Awarded by University of Chicago*, 2016

Technical Talks

Brian Yan, "Using Digital Signal Processors for Fast and Lightweight Acoustic Model Inference", *SoundHound Inc. Tech-Talk*, 2020

- Demonstrated the viability of acoustic model inference on digital signal processors (DSP) by integrating the Snapdragon SDK with SoundHound's tech on an embedded automotive board
- This summer project was succeeded by a new production-level deployment of CNN-based acoustic models on DSPs for an automotive client interested in non-GPU based solutions

Non-Refereed Reports

Brian Yan, Daniel Chang, "Neural Abstractive Summarization of Scientific Documents", 2020

Brian Yan, Kiran Prasad, Zach Kitowski, Senzeyu Zhang, "Adversarial Robustness through Volumetric Loss Functions", 2020

Qinlan Shen, Tushar Kanakagiri, **Brian Yan**, "Unsupervised Identification and Tracking of Fine-Grained Political Factions", 2020

Brandon Garcia, Arvind Iyengar, Hannah Kenagy, Cara LoPiano, Madhav Seth, **Brian Yan**, "The Future of Solar Energy in the US: A Technological, Political and Financial Enquiry", 2015

Employment History

2021: Tencent AI Lab (Seattle), Speech Recognition Research Intern

2020: SoundHound Inc., Machine Learning Intern

2016-2019: Accenture, Technology Strategy Consultant

CEO, CIO, and CTO clients across multiple communications, media, and technology industries:

- Digital Supply Chain Architecture Project, *Media and Entertainment Client*
- Joint Initiative, *Semiconductor Client*
- IT Strategy and Architecture for Omnichannel Transformation Project, *Telecommunications Client*
- Digital Architecture Governance Project, *Telecommunications Client*
- Network Deployment Data Foundation Project, *Telecommunications Client*
- Cloud Storage Strategy Project, *Insurance Client*
- IT Cost Reduction Project, *High-End Retail Client*

2015: Bank of Montreal, Foreign Exchange Trading Intern

2014: Guard Capital Management, Research Analyst Intern

2013: American Express OPEN, Business Analyst Intern

2012: DIA Associates, iOS Developer Intern

Extracurriculars & Interests

UChicago Varsity Swimming Team, 100 & 200 Yard Breaststroker

- Trained for 20+ hours a week as a varsity student-athlete for 4 years

UChicago Swimming & Diving School, Volunteer Instructor

- Taught local Hyde Park children from ages 4-12 how to swim for 2 hours every week

Great Outdoors - Avid rock climber and hiker; personal goal to climb in Meteora, Greece

Travel - Over 20 countries visited, and counting; always tries at least one new food