# Mu Yang

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https://mu-y.github.io

## Research Interests

**Speech Recognition, Speech Synthesis, Natural/Spoken Language Processing**.

## Education

08/2021–present **University of Texas at Dallas**, Dallas, USA.

- **Ph.D. in Electrical Engineering**. Supervisor: *Dr. John H. L. Hansen*

08/2020–08/2021 **Texas A&M University**, *GPA: 4.0/4.0*, College Station, USA.

- **Ph.D. in Computer Science (quitted)**. Supervisor: *Dr. Ricardo Gutierrez-Osuna*

08/2017–05/2019 **University of Southern California**, *GPA: 3.73/4.0*, Los Angeles, USA.

- **M.Sc. in Electrical Engineering**.

09/2013–06/2017 **Chongqing University**, *GPA: 3.63/4.0*, Chongqing, China.

- **B.Eng. in Communication Engineering**.

## Publications

- **Mu Yang**, Shaojin Ding, Tianlong Chen, Tong Wang, Zhangyang Wang, "Towards Lifelong Learning of Multilingual Text-To-Speech Synthesis", *submitted to ICASSP 2022*, 2021.
- Mingyu Derek Ma, Jiao Sun, **Mu Yang**, Kung-Hsiang Huang, Nuan Wen, Shikhar Singh, Rujun Han, Nanyun Peng, "EventPlus: A Temporal Event Understanding Pipeline", *NAACL (Demonstrations)*, 2021.
- **Mu Yang**, Karolina Nurzynska, Ann E. Walts, Arkadiusz Gertych, "A CNN-based active learning framework to identify mycobacteria in digitized Ziehl-Neelsen stained human tissues", *Computerized Medical Imaging and Graphics*, 2020.
- Kung-Hsiang Huang, **Mu Yang**, Nanyun Peng, "Biomedical Event Extraction with Hierarchical Knowledge Graphs", *EMNLP (Findings)*, 2020.
- Prashanth Shivakumar*, **Mu Yang***, Panayiotis Georgiou, "Spoken Language Intent Detection using Confusion2Vec", *Interspeech*, 2019.
- Rujun Han, I-Hung Hsu, **Mu Yang**, Aram Galstyan, Ralph Weischedel, Nanyun Peng, "Deep Structured Neural Network for Event Temporal Relation Extraction", *CONLL*, 2019.

## Work Experiences

08/2019–08/2020 **Research Assistant**, USC Information Sciences Institute, *Plus Lab*, Supervisor: *Dr. Nanyun (Violet) Peng*, Los Angeles, USA.

- NLP projects including Event Extraction and Event Temporal Relation Extraction.

05/2018–10/2018 **R&D Intern**, Cedars-Sinai Medical Center, *Bioimage Informatics Lab*, Supervisor: *Dr. Arkadiusz Gertych*, Los Angeles, USA.

- Develop data processing and CNN model pipelines to perform TB detection on digital slides of human tissue.

## Selected Projects

**Mis-pronunciation Detection on Non-native speech**.

- Audio Demo: `https://mu-y.github.io/speech_samples/mpd_l2arctic/l2arctic_chinese.html`
- Implemented a text-dependent Mis-pronunciation Detection (MPD) system in PyTorch.
- Explored pre-trained acoustic representations including Wav2vec, Wav2vec 2.0.

**WaveNet-based Singing Voice Synthesis**.

- Collected isolated vocal tracks and obtained time-aligned phonetic transcripts.
- Trained WaveNet-based Timbre model to predict Vocoder features conditioning on singer identity, F0 contour, phoneme identity.
- Fed predicted MFSC and Aperiodicity coefficients and true F0 into WORLD Vocoder to synthesize audio.

**DNN-based Acoustic Model and ASR Training**.

- Trained a DNN Acoustic Model(AM) on force aligned TED-LIUM dataset.
- Created a dictionary and encoded a Language Model(LM) for a small piece of text.
- Used Kaldi toolkit to train a complete ASR based on the AM and LM, ran decoding for self-spoken recordings.

**Lyrics Dataset Collection, Cleaning and Genre Classification**.

- Web crawled lyrics using the metadata returned by iTunes search API.
- Collected 14k lyrics for 8 different genre labels after data cleaning.
- Performed classification using models including Naive Bayes, SVM, Bidirectional LSTM.

**Equalizer Design for Loudspeaker-Room Correction**.

- Implemented second-order filter based equalizers in Matlab with flexible target frequency responses.
- Calibrated Room Impulse Responses from multiple databases with the equalizers.
- Applied equalizers on audios and asked 21 people to give preference on un-equalized and equalized audios.

**Psychoacoustics Simulation and Validation**.

- Simulated binaural localization using HRTFs in Matlab. Analyzed the effect of Cone of Confusion by hearing test.
- Designed hearing test for Weber's Law validation experiment using successive tones and white noise.

## Teaching Experiences

08/2021–present **Teaching Assistant**, ENGR 3341 Probability Theory and Statistics, UTD.

08/2018–05/2019 **Grader**, EE 483 Introduction to Digital Signal Processing, USC.

## Activities & Awards

- Exchange Student, National Sun Yat-sen University, Taiwan, 02/2016–06/2016
- National Scholarship of China (top 1%), 2015
- Outstanding Student Scholarship at CQU, consecutive, 2014–2016
- Meritorious Winner, 2016 US Interdisciplinary Contest In Modeling(ICM), 2016

## Skills

- **Programming Languages**
  Python, Bash/Shell, Matlab, C/C++, Java.
- **Technical Tools**
  Pytorch, Tensorflow, Keras, Kaldi, Vim, Git, Audacity.