Min-Jae Hwang

Speech Synthesis & AI Researcher

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Education

Combined M.S. and Ph.D degree in Electrical and Electronics — *Seoul, Korea*

Yonsei University — *Sep. 2015 - Feb. 2020*

- Research topics: Speech synthesis, neural vocoder, and audio watermarking
- Thesis: <LP-WaveNet: Linear Prediction-based WaveNet Speech Synthesis>

B.S. degree in Electrical and Electronics — *Seoul, Korea*

Yonsei University — *Mar. 2011 - Aug. 2015*

- National Science & Technology Scholarship (2013 – 2015) from Department of Engineering

Work Experience

Research Scientist — *Seongnam, Korea*

Voice & Avatar team at Naver Corporation — *May. 2019 - Present*

- Primarily researched the high-quality, fast neural vocoding system
- Developed and adopted various neural vocoders including LP-WaveNet and Multiband HN-PWG for various TTS services at Naver
- Presently developing PyTorch-based TTS toolkit to build high-quality, fast, and controllable GPU TTS system

Research Intern — *Beijing, China*

Speech group at Microsoft Research Asia — *Jan. 2018 - Nov. 2018*

- Researched the topic of WaveNet vocoders for high-quality TTS system
- Investigated the methodologies to adopt the traditional speech processing approach to the neural vocoding systems
- "*LP-WaveNet: Linear Prediction-based WaveNet Speech Synthesis*" at APSIPA 2020
- "*Improving LPCNet-based Text-to-Speech with Linear Prediction-structured Mixture Density Network*" at ICASSP 2020

Research Intern — *Seongnam, Korea*

Voice team at Naver Corporation — *Dec. 2017 - Dec. 2017*

- Researched the topic of glottal vocoder-based parametric TTS system
- "*A Unified Framework for the Generation of Glottal Signals in Deep Learning-based Parametric Speech Synthesis Systems*" at Interspeech 2020

Honors and Awards

2020 2nd place, *N Innovation* in Naver Corporation, Seongnam, Korea

2020 Best Paper Award, *APSIPA* Conference, Auckland, New Zealand

2019 1st place, *N Innovation* in Naver Corporation, Seongnam, Korea

2018 Award of Excellence, Microsoft Research Asia, Beijing, China

Program Committees

2021 Chairman, 2021 Interspeech, Session <Thu-M-V-3 source separation I> — *Brno, Czech*

Presentations

- Voice Synthesis and Applications — *Seongnam, Korea*

Invited talks at KAIST and SNU — *Apr. - May. 2022*

- High-fidelity Parallel WaveGAN with Harmonic-plus-Noise Models — *Seongnam, Korea*

2021 Engineering day at Naver Corporation — *Jul. 2021*

- Low-cost and High-quality TTS based on TTS-driven Data Augmentation — *Seongnam, Korea*

2020 N Innovation award at Naver Corporation — *Jan. 2021*

- TTS-driven Data Augmentation for Fast and High-quality Speech Synthesis — *Seongnam, Korea*

2020 Engineering day at Naver Corporation — *Oct. 2020*

- High-quality DNN-TTS — *Seongnam, Korea*

2019 Engineering day at Naver Corporation — *Oct. 2019*

- *Toward WaveNet Speech Synthesis [Link]*
Technical talk at Naver Corporation

Seongnam, Korea
Dec. 2018

Publications

[Journal]

- *SVD-based Adaptive QIM Watermarking on Stereo Audio Signals*
Min-Jae Hwang, JeeSok Lee, Misuk Lee, and Hong-Goo Kang

IEEE Transactions on Multimedia
3.977 impact factor at 2017

[Conference]

- *HierSpeech: Bridging the Gap between Text and Speech by Hierarchical Variational Inference using Self-supervised Representations for Speech Synthesis*
Sang-Hoon Lee, Seung-Bin Kim, Ji-Hyun Lee, Eunwoo Song, **Min-Jae Hwang**, Seong-Whan Lee

2022 NeurIPS

- *Language Model-Based Emotion Prediction Methods for Emotional Speech Synthesis Systems*
Hyunwook Yoon, Ohsung Kwon, Hoyeon Lee, Ryuichi Yamaoto, Eunwo Song, Jae-Min Kim, and **Min-Jae Hwang**

2022 Interspeech

- *TTS-by-TTS 2: Data-selective Augmentation for Neural Speech Synthesis Using Ranking Support Vector Machine with Variational Autoencoder*
Eunwoo Song, Ryuichi Yamamoto, Ohsung Kwon, Chan-Ho Song, **Min-Jae Hwang**, Suhyeon Oh, Hyun-Wook Yoon, Jin-Seob Kim Jae-Min Kim

2022 Interspeech

- *Linear Prediction-based Parallel WaveGAN Speech Synthesis*
Min-Jae Hwang, Hyun-Wook Yoon, Chan-Ho Song, Jin-Seob Kim, Jae-Min Kim and Eunwoo Song

2022 ICEIC

- *Effective Data Augmentation Methods for Neural Text-to-Speech Systems*
Suhyeon Oh, Ohsung Kwon, **Min-Jae Hwang**, Jae-Min Kim, and Eunwoo Song

2022 ICEIC

- *High-Fidelity Parallel WaveGAN with Multi-Band Harmonic-Plus-Noise Model*
Min-Jae Hwang*, Ryuichi Yamamoto*, Eunwoo Song, and Jae-Min Kim (*Equally contributed)

2021 Interspeech

- *LiteTTS: A Lightweight Mel-Spectrogram-Free Text-to-Speech Synthesizer Based on Generative Adversarial Networks*
Huu-Kim Nhuyen, Kihyuk Jeong, Seyun Um, **Min-Jae Hwang**, Eunwoo Song, Hong-Goo Kang

2021 Interspeech

- *TTS-by-TTS: TTS-driven Data Augmentation for Fast and High-quality Speech Synthesis*
Min-Jae Hwang, Ryuichi Yamamoto, Eunwoo Song, Jae-Min Kim

2021 ICASSP

- *Parallel Waveform Synthesis based on Generative Adversarial Networks with Voicing-aware Conditional Discriminators*
Ryuichi Yamamoto, Eunwoo Song, **Min-Jae Hwang**, and Jae-Min Kim

2021 ICASSP

- *ExcitGlow: Improving a WaveGlow-based Neural Vocoder with Linear Prediction Analysis*
Suhyeon Oh, Hyungseob Lim, Kyungguen Byun, **Min-Jae Hwang**, Eunwoo Song, and Hong-Goo Kang

2020 APSIPA

- *LP-WaveNet: Linear prediction-based WaveNet speech synthesis*
Min-Jae Hwang, Frank Soong, Eunwoo Song, Xi Wang, Hyeonjoo Kang, Hong-Goo Kang

2020 APSIPA

- *Neural Text-to-Speech with a Modeling-by-Generation Excitation Vocoder*
Eunwoo Song, **Min-Jae Hwang**, Ryuichi Yamamoto, Jin-Seob Kim, Ohsung Kwon, and Jae-Min Kim

2020 Interspeech

- *Improving LPCNet-based Text-to-Speech with Linear Prediction-structured Mixture Density Network*
Min-Jae Hwang, Eunwoo Song, Ryuichi Yamamoto, Frank Soong, and Hong-Goo Kang

2020 ICASSP

- *Parameter Enhancement for MELP Speech Codec in Noisy Communication Environment*
Min-Jae Hwang and Hong-Goo Kang

2019 Interspeech

- *A Unified Framework for the Generation of Glottal Signals in Deep Learning-based Parametric Speech Synthesis Systems* — *2018 Interspeech*

Min-Jae Hwang, Eunwoo Song, Jinseob Kim, and Hong-Goo Kang

- *Modeling-by-Generation-structured Noise Compensation Algorithm for Glottal Vocoding Speech Synthesis System* — *2018 ICASSP*

Min-Jae Hwang, Eunwoo Song, Kyunggeun Byung, and Hong-Goo Kang

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[Workshop]

- *Improved Parallel WaveGAN Vocoder with Perceptually Weighted Spectrogram Loss* — *2021 IEEE SLT workshop*

Eunwoo Song, Ryuichi Yamamoto, **Min-Jae Hwang**, Jin-Seob Kim, Ohsung Kwon, and Jae-Min Kim

Patents

- *Method and System for Synthesizing Emotional Speech based on Emotion Prediction* — *KR 10-2022-0047188*

Hyunwook Yoon, **Min-Jae Hwang**, Ohsung Kwon, Hoyeon Lee, Ryuichi Yamaoto, and Eunwo Song — *Applied*

- *Neural Network for Speech Synthesis Based on Selective Self-augmentation Algorithm* — *KR 10-2022-0012736*

Ohsung Kwon, Suhyuon Oh, **Min-Jae Hwang**, and Eunwoo Song — *Applied*

- *Method and System for Non-autoregressive Speech Synthesis* — *KR 10-2021-0115859*

Min-Jae Hwang, Ryuichi Yamamoto, and Eunwoo Song — *Applied*

Additional Information

– **Language** : Korean, English

– **Programming** : Python, Bash, LaTex, Matlab

– **Deep Learning Framework** : PyTorch

– **Coorporation** : Git