Sunwoo **Kim**

700 N. Woodlawn Ave. Luddy Hall, Bloomington, IN, 47404

kimsunw@iu.edu | www.kimsunwoo.com | sunwookimiub | Sunwoo Kim

Summary

PhD candidate in Intelligent Systems Engineering department in Luddy School of Informatics, Computing, and Engineering at Indiana University Bloomington. I investigate efficient machine learning and deep learning solutions for audio processing problems with my advisor Prof. Minje Kim. My current research focuses on novel modes of compression for source separation applications through personalization and scalable learning for practical deployment onto resource-constrained devices.

Positions Held

Indiana University — *Bloomington, IN*

Research Assistant — *Dec 2018 - Present*

- Funded by NSF project "A Portable and Intelligent Testing System for Power-efficient and Accurate Foodborne Pathogen Detection"
- Researching efficient machine learning and deep learning models through various modes of model compression

Amazon Lab126 — *Sunnyvale, CA (Remote)*

Applied Scientist Intern — *Jun. 2021 - Sep 2021*

- Group: Audio Technology
- Supervisors: Mrudula Athi, Guangji Shi, Trausti Kristjansson
- Project: Personalized speech dereverberation

Amazon Lab126 — *Sunnyvale, CA (Remote)*

Applied Scientist Intern — *May. 2020 - Aug 2020*

- Group: Audio Technology
- Supervisors: Yuzhou Liu, Krishna Kamath, Trausti Kristjansson
- Project: Model compression for speech enhancement

Qualcomm — *San Diego, CA*

Interim Engineering Intern — *May. 2019 - Aug 2019*

- Group: Audio Algorithms
- Supervisors: Shuhua Zhang, Laehoon Kim
- Project: Non-linear echo cancellation

Indiana University — *Bloomington, IN*

Teaching Assistant — *Aug. 2016 - Dec 2018*

- Deep Learning Systems [Spring 2018]
- Machine Learning for Signal Processing [Fall 2017, Fall 2018]
- Software Engineering [Fall 2016, Spring 2017]

National Center for Supercomputing Applications — *Urbana, IL*

CyberGIS SPIN Intern — *May. 2015 - May 2016*

- Parallel Terrain Analysis and predictive ecosystem mapping

Publications

BLOOM-Net: Blockwise Optimization for Masking Networks Toward Scalable and Efficient Speech Enhancement — *Singapore*

Sunwoo Kim, Minje Kim (Under Review) — *May 22-27, 2022*

International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

Test-Time Adaptation Toward Personalized Speech Enhancement: Zero-Shot Learning with Knowledge Distillation — *New Paltz, NY (Remote)*

Sunwoo Kim, Minje Kim — *Oct 17-20, 2021*

IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)

Personalized Speech Enhancement through Self-Supervised Data Augmentation and Purification — *Brno, Czech Republic (Remote)*

Aswin Sivaraman, **Sunwoo Kim**, Minje Kim — *Aug 30 - Sep 3, 2021*

Interspeech

Boosted Locality Sensitive Hashing: Discriminative Binary Codes For Source Separation — *Barcelona, Spain (Remote)*

Sunwoo Kim, Haici Yang, Minje Kim (Nominated for the Best Student Paper Award) — *May 4-8, 2020*

International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

Incremental Binarization On Recurrent Neural Networks For Single-Channel Source Separation — *Brighton, UK*

Sunwoo Kim, Mrinmoy Maity, Minje Kim — *May 12-17, 2019*

International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

Education

Indiana University — *Bloomington, IN*

Ph.D. Candidate in Intelligent Systems Engineering — *Aug 2016 - May 2022 (expected)*

Advised by professor **Minje Kim**

University of Illinois at Urbana-Champaign — *Urbana, IL*

B.S. in Physics — *May 2016*

Academic Services

IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)

Conference Reviewer — *2020, 2021, 2022*

IEEE Transactions on Audio, Speech and Language Proceedings (TASLP)

Journal Reviewer — *2021*

European Association for Signal Processing (EURASIP) Journal on Audio, Speech, and Music Processing

Journal Reviewer — *2019, 2020, 2021*

Technical and Personal skills

Programming

Python, C++, Java, R, MATLAB, Bash scripting

Software and Tools

Tensorflow, PyTorch, Keras, Kaldi

Languages

Fluent in Korean and English. Able to understand basic Chinese (Mandarin)