

# Sunwoo Kim

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## Summary

PhD candidate in Intelligent Systems Engineering track in 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

### 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

### Test-Time Adaptation Toward Personalized Speech Enhancement: Zero-Shot Learning with Knowledge Distillation

New Paltz, NY

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

Barcelon, 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

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### Indiana University

PH.D. CANDIDATE IN INTELLIGENT SYSTEMS ENGINEERING

Advised by professor **Minje Kim**

*Bloomington, IN*

*Aug 2016 - May 2022 (expected)*

### University of Illinois at Urbana-Champaign

B.S. IN PHYSICS

*Urbana, IL*

*May 2016*

## Academic Services

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

CONFERENCE REVIEWER

*2020, 2021*

### 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

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### 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)