Bongjun Kim

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EDUCATION

Ph.D. in Computer Science — June 2020
Interactive Audio Lab
Northwestern University, Evanston, IL, USA

M.S. in Culture Technology — Aug 2012
Audio and Interactive Media Lab
Korea Advanced Institute of Science and Technology (KAIST), Korea

B.S. / M.S. in Industrial Engineering — Aug 2009
Industrial Informatics Lab
Ajou University, Suwon, Korea
(Study Abroad, Lulea University of Technology, Lulea, Sweden) — Aug 2006 – Dec 2006

RESEARCH INTERESTS

Machine Learning - deep learning, interactive machine learning, active learning
Audio Signal Processing - sound event recognition, audio/music information retrieval
Human Computer Interaction - interactive intelligent systems, creativity support tools

PROFESSIONAL EXPERIENCE

Data Scientist | 3M, MN, USA — Aug 2020 – Present
Health Information Systems
- Sound and speech recognition

Corporate Research Systems Lab
- Sound event recognition
- Machine learning for manufacturing process

Research Assistant | Northwestern University, IL, USA — Sep 2013 – Jun 2020
Interactive Audio Lab. | The Department of Computer Science
- Sound event detection with weakly-labeled data
- A human-in-the-loop interface for sound event annotation
- Audio search by vocal imitation
- Speeding learning of personalized audio equalization

Research Intern | Bosch, CA, USA — Jun 2018 – Aug 2018
The Research and Technology Center
- Deep learning for sound event recognition

Research Intern | Gracenote, CA, USA — Jun 2017 – Sep 2017
The Media Technology Lab.
- Audio compression identification

Research Assistant | KAIST, Korea — Sep 2010 – Aug 2012
Audio and Interactive Media Lab.
- Mobile media as a musical instrument

Research Engineer | Doosan Infracore Co. Ltd, Korea — Jul 2009 – Jul 2010
- Research process innovation

TEACHING EXPERIENCE

Teaching Assistant | Northwestern University — Spring, Fall 2019, Winter 2020
CS-349 Machine Learning

Teaching Assistant | Northwestern University — Winter, 2019
CS-352 Machine Perception of Music and Audio

Teaching Assistant | Northwestern University — Fall quarters, 2014-2017
EECS-349 Machine Learning

Teaching Assistant | KAIST, Korea — Fall, 2012
GCT-633 Audio and Multimedia Programming

JOURNAL PUBLICATIONS

- Bryan Pardo, Mark Cartwright, Prem Seetharaman, and **Bongjun Kim**, "Learning to Build Natural Audio Production Interfaces," *Arts*, Vol. 8, Issue 3, 2019
- **Bongjun Kim** and Bryan Pardo, "A Human-in-the-loop System for Sound Event Detection and Annotation ," *ACM Transaction on Interactive Intelligent System (TiiS)*, Vol. 8, Issue 2, Article 13, June 2018.
- **Bongjun Kim** and Kiejin Park, "Probabilistic Delay Model of Dynamic Message Frame in FlexRay Protocol," *IEEE Transaction on Consumer Electronics, Vol. 55, Issue 1, pp. 77-82*, 2009.
- Bumjoo Park, Kiejin Park, and **Bongjun Kim**, "A Performance Isolation Mechanism Based on Fuzzy Technique for Web Server Loading Balancing," *The Institute of Electronics, Information and Communication Engineers Transactions on Communications, Vol.E92-B, No.4*, 2009.

REFEREED CONFERENCE AND WORKSHOP PUBLICATIONS

- Fatemeh Pishdadian, **Bongjun Kim**, Prem Seetharaman, and Bryan Pardo, "Classifying non-speech vocals: Deep vs Signal Processing Representations," *the Detection and Classification of Acoustic Scenes and Events Workshop (DCASE)*, 2019.
- **Bongjun Kim** and Bryan Pardo, "Sound Event Detection Using Point-labeled Data," *IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)*, 2019.
- **Bongjun Kim** and Shabnam Ghaffarzadegan, "Self-supervised Attention Model for Weakly Labeled Audio Event Classification," *European Signal Processing Conference (EUSIPCO)*, 2019.
- **Bongjun Kim** and Bryan Pardo, "Improving Content-based Audio Retrieval by Vocal Imitation Feedback," *IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, 2019.
- **Bongjun Kim**, Madhav Ghei, Bryan Pardo, and Zhiyao Duan, "Vocal Imitation Set: a dataset of vocally imitated sound events using the AudioSet ontology," *the Detection and Classification of Acoustic Scenes and Events Workshop (DCASE)*, 2018.
- **Bongjun Kim** and Zafar Rafii, "Lossy Audio Compression Identification," *European Signal Processing Conference (EUSIPCO)*, 2018.
- **Bongjun Kim**, "Leveraging User Input and Feedback for Interactive Sound Event Detection and Annotation," Student Consortium, *ACM International Conference on Intelligent User Interfaces (IUI)* 2018.
- **Bongjun Kim** and Bryan Pardo, "I-SED: an Interactive Sound Event Detector," *ACM International Conference on Intelligent User Interfaces (IUI)*, 2017
- **Bongjun Kim** and Bryan Pardo, "Interface Design for Interactive Sound Event Detection," *Workshop on Awareness Interface and Interaction (AWARE) at the ACM International Conference on Intelligent User Interface (IUI)*, 2017
- **Bongjun Kim** and Bryan Pardo, "Speeding Learning of Personalized Audio Equalization," *International Conference on Machine Learning and Applications (ICMLA)*, Dec. 2014
- **Bongjun Kim** and Bryan Pardo, "Adapting Collaborative Filtering to Personalized Audio Production," *AAAI Conference on Human Computation and Crowdsourcing (HCOMP)*, 2014
- **Bongjun Kim** and Woon Seung Yeo, "Probabilistic Prediction of Rhythmic Characteristics in Markov Chain-based Melodic Sequences," *International Computer Music Conference (ICMC)* 2013

- Seunghun Kim, **Bongjun Kim**, and Woon Seung Yeo, "IAMHear: A Tabletop Interface with Smart Mobile Devices using Acoustic Location," *Conference on Human Factors in Computing Systems (CHI)* works in progress, 2013
- **Bongjun Kim** and Woon Seung Yeo, "Interactive Mobile Music Performance with Digital Compass," *the International Conference on New Interfaces for Musical Expression (NIME)*, 2012.
- Minkoo Kang, Kiejin Park, and **Bongjun Kim**, "A Scheduling Alogorithm for Reducing FlexRay Message Response Time using Empty Minislots in Dynamic Segment," Digest of Technical Papers, *International Conference on Consumer Electronics (ICCE)*, 2010.
- Minkoo Kang, Kiejin Park, and **Bongjun Kim**, "A Static Message Scheduling Algorithm for Reducing FlexRay Network Utilization," *IEEE International Symposium on Industrial Electronics*, 2009.
- **Bongjun Kim** and Kiejin Park, "Analysis of Frame Delay Probability in the FlexRay Dynamic Segment," *The IEEE International Conference on Industrial Informatics*, 2008.
- Minkoo Kang, Kiejin Park, and **Bongjun Kim**, "PDO Packing Mechanism for Minimizing CANopen Network Utilization," *The 34th Annual Conference of the IEEE Industrial Electronics Society*, 2008.
- Minkoo Kang, Kiejin Park, and **Bongjun Kim**, "Determining the Size of a Static Segment and Analyzing the Utilization of In-vehicle FlexRay Network," *Third International Conference on Convergence and Hybrid Information Technology*, 2008.

NON-REFEREED PUBLICATIONS

- **Bongjun Kim**, "Building Light-Weight Convolutional Neural Networks for Acoustic Scene Classification Using Audio Embeddings," *the Detection and Classification of Acoustic Scenes and Events (DCASE) challenge*, 2021.
- **Bongjun Kim**, "Convolutional Neural networks with Transfer Learning for Urban Sound Tagging," *the Detection and Classification of Acoustic Scenes and Events (DCASE) challenge*, 2019.
- **Bongjun Kim**, "Ensemble of Convolutional Neural Networks with Transfer Learning for Audio Classification," *Making Sense of Sounds Data Challenge*, 2018.

PATENTS

- Zafar Rafii, Markus Cremer, and **Bongjun Kim**. "Methods, Apparatus and Articles of Manufacture to Identify Sources of Network Streaming Services," US 11049507, June 2021.
- Zafar Rafii, Markus Cremer, and **Bongjun Kim**. "Methods, Apparatus and Articles of Manufacture to Identify Sources of Network Streaming Services," US 10733998, August 2020.
- Zafar Rafii, Markus Cremer, and **Bongjun Kim**, "Methods and Apparatus to Perform Windowed Sliding Transforms," US 10629213, April 2020.

AWARDS/ HONORS

2^{nd} **place in IEEE DCASE "Urban Sound Tagging" Challenge (10 teams)** 2019
IEEE Detection and Classification of Acoustic Scenes and Events Challenge

2^{nd} **place in IEEE DCASE "Making Sense of Sound Data" Challenge (12 teams)** 2018
IEEE Detection and Classification of Acoustic Scenes and Events Challenge

WASPAA Travel Grant 2019
IEEE Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA)

The NSF Travel Grant 2019
European Signal Processing Conference (EUSIPCO)

The SIGCHI Student Travel Grant 2019
ACM International Conference on Intelligent User Interfaces (IUI)

The NSF Travel Grant 2017, 2018
ACM International Conference on Intelligent User Interfaces (IUI)

Segal Design Cluster Fellowship 2015 – 2016
Northwestern University, IL, USA

Outstanding Teaching Assistant Award 2012
GCT633 Audio and Multimedia Programming
Korea Advanced Institute of Science and Technology (KAIST), Korea

Best Presentation and Paper Award 2008
IEEE International Conference on Industrial Informatics

INVITED TALKS / POSTERS

[Talk] “Building AI models for sound recognition with less annotation effort” Dec 2020
AppliedAI meetup, St. Paul, MN, USA

[Poster] “Sound Event Detection using Point-labeled Data” Oct 2019
Speech and Audio in the Northeast (SANE), Columbia University, NYC, USA

[Talk] “A Human-in-the-loop System for Audio Retrieval” Jun 2019
Midwest Music and Audio Day, Indiana University, Bloomington, IN, USA

[Talk] “A Human-in-the-loop System for Sound Event Detection and Annotation” Mar 2019
ACM International Conference on Intelligent User Interfaces (IUI 2019), LA, USA

[Poster] “Vocal Imitation Set: a dataset of vocally imitated sound events” Oct 2018
Speech and Audio in the Northeast (SANE), Google, Cambridge, MA, USA

[Talk] “Interactive Intelligent user interfaces for Music and Audio” Mar 2018
HCI@KAIST Seminars, KAIST, Korea

[Talk] “Interactive Intelligent user interfaces for Music and Audio” Mar 2018
Music and Audio Computing Lab., Culture Technology, KAIST, Korea

[Talk] “Interactive Intelligent user interfaces for Music and Audio” Mar 2018
Ewha Arts & Science Institute, Ewha Womans University, Korea.

[Talk] “A Human-in-the-loop System for Sound Event Detection and Annotation” Mar 2018
Haii:Human-AI-Interaction, inc., Yonsei University, Korea

[Talk] “I-SED: an Interactive Sound Event Detector” Jun 2017
Midwest Music and Audio Day, Evanston, IL, USA

[Talk] “I-SED: an Interactive Sound Event Detector” Feb 2017
Simons Institute Workshop on Interactive Learning, Berkeley, CA, USA

[Talk] “I-SED: an Interactive Sound Event Detector” Feb 2017
Gracenote, Emeryville, CA, USA

EXTERNAL SERVICES

Journal Reviewer
IEEE Signal Processing Letters 2020
IEEE Signal Processing Magazine 2018

Conference Reviewer
International Conference on Acoustics, Speech, and Signal Processing (ICASSP) 2015 – Present
Workshop on Detection and Classification of Acoustic Scenes and Events (DCASE) 2021 – Present
International Conference on New Interfaces for Musical Expression (NIME) 2013 – Present
Workshop on Applications of Signal Processing to Audio and Acoustics (WASPAA) 2015, 2021
ACM User Interface Software and Technology Symposium (UIST) 2019
ACM Multimedia Conference 2016

Student Volunteer for Conferences
ACM International Conference on Intelligent User Interfaces (IUI), Cyprus 2017
International Conference on Design Computing and Cognition, USA 2016

	Conference Organizing Staff International Conference on New Interfaces for Musical Expression (NIME), Korea	2013
DATA SET	Vocal Imitation Set: vocal imitations of sounds from the AudioSet ontology https://doi.org/10.5281/zenodo.1340763	May 2018
GUEST LECTURES	"Sound object labeling" CS-352: Machine perception of Music and Audio, Northwestern University	Feb 2019
	"Collaborative Filtering" EECS-349: Machine Learning, Northwestern University	Oct 2017
	"Collaborative Filtering" EECS-349: Machine Learning, Northwestern University	Oct 2016
	"Collaborative Filtering" EECS-349: Machine Learning, Northwestern University	Oct 2015
MEDIA	**Podcast Guest** *Conversations on Applied AI - Stories from Experts in Artificial Intelligence* https://appliedai.buzzsprout.com/1101152/8222571	Mar 2021
RESEARCH MENTORING	**Emma McDonnell** | Undergraduate at Northwestern Univ. Project: Audio editing interfaces for the visually impaired	2019
	Brian Margolis | M.S. at Northwestern Univ. Project: Interactive audio annotation interfaces for multi-class labeling	2018
	Madhav Ghei | Undergraduate at Northwestern Univ. Project: A query-by-vocal imitation audio search system	2018
ART PERFORMANCE AND EXHIBITION	**Mobile music performance: Where Are You Standing?** Conference on New Interfaces for Musical Expression (NIME), Ann Arbor, USA	May 2012
	Interactive sound art installation: Turning Into Sound Daejoen Children Art Gallery, Daejeon, Korea	Jan 2012
	Mobile music performance: ADC Project- Don't Imagine Arco Art Theater, Seoul, Korea	Aug 2011
	Mobile music performance: Where Are You Standing? Hyundai Card / Capital Inc., Seoul, Korea	Jun 2011