SANG KEUN CHOE

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RESEARCH INTEREST

Machine Learning, Natural Language Processing, Network Analysis

EDUCATION

Seoul National University, Seoul, Republic of Korea 2011 - 2018
· B.S. in Electrical and Computer Engineering
· B.S. in Mathematics (Double Major)
· CGPA: 4.07/4.30 (Summa Cum Laude)
· 21-month absence for compulsory military duty

Sejong Science High School, Seoul, Republic of Korea 2008 - 2011
· Natural Science Department
· First vice president

HONORS AND AWARDS

Presidential Scholarship for Science and Engineering Students (0.02%) 2011 - 2016
· Full tuition + stipend (4000$/yr) for undergraduate study
Gold Award, Korean University Student Mathematical Competition 2011
Silver Award, Korean Mathematical Olympiad (KMO) 2010

PUBLICATIONS

Published

· Sungkyun Chang, Juheon Lee, Sang Keun Choe, and Kyogu Lee. "Audio Cover Song Identification using Convolutional Neural Network." In *NIPS Machine Learning for Audio Signal Processing Workshop*, 2017.

Under Review

· Sang Keun Choe and Kyogu Lee. "Image Ranking by Learning Efficient Multi-Level Feature Representation." Under review at *CVPR*, 2018.
· Juheon Lee, Sungkyun Chang, Sang Keun Choe, and Kyogu Lee. "Cover Song Identification using Song-to-Song Cross-Similarity Matrix with Convolutional Neural Network." Under review at *ICASSP*, 2018.

RESEARCH EXPERIENCE

Music Recommender System Nov 2017 - Present
Corporate Project: Supported by *KAKAO* Advisor: Prof. Kyogu Lee
· Studying graph neural networks to apply to user rating data

Image Ranking by Learning Efficient Multi-Level Feature Representation Sep 2017 - Nov 2017
Individual Research Advisor: Prof. Kyogu Lee
· Developed a visual search algorithm considering multi-level visual features
· Proposed a framework that unifies different level feature representations with an appropriate scaling factor

Audio Cover Song Identification using Convolutional Neural Networks Jun 2017 - Oct 2017
Corporate Project: Supported by *KAKAO* Advisor: Prof. Kyogu Lee
· Proposed convolutional neural networks that receive a cross-similarity matrix as an input
· Studied attention algorithms and Siamese neural networks

Short Range MIMO Technology Sep 2013 - Dec 2013
Corporate Project: Supported by *Samsung* Advisor: Prof. Jong-Seon No
· Analyzed performance of Amplify-and-Forward relaying protocols with MATLAB

INTERNSHIP

Music and Audio Research Group Jan 2017 - Present
Advisor: Prof. Kyogu Lee
· Studied deep learning and its application to music and audio
· Conducted research on cover song identification, visual search, generative models, and recommender systems

Cryptography and Coding Laboratory Jan 2013 - Dec 2013
Advisor: Prof. Jong-Seon No
· Studied information theory, matrix analysis, and communication theory
· Analyzed performance of wireless networks with MATLAB
· Submitted undergraduate thesis "Distributed Space-Time Code in Cooperative Communication"
· Participated in *2014 ISIT* (After finishing internship)

WORK EXPERIENCE

Headquarter of Republic of Korea Army Oct 2014 - Jul 2016
Position: Sergeant specialized in information technology
· Analyzed underground acoustic waves and infrasound signals to detect the tunnel infiltration of North Korea
· Participated in the Task Force against 4^{th} nuclear experiment in North Korea

EXTRACURRICULAR ACTIVITIES

Korean Mathematical Olympiad Summer Camp Aug 2010
· Intensive mathematics education program for top contestants at KMO 1^{st} round

SKILLS

Programming Language: Python, MATLAB, C/C++, Java, HTML
Machine Learning API: PyTorch, TensorFlow
Human Language: English (High Proficiency), Korean (Native)