

# Miyoung Chung

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## Educations

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**Ph.D. Student** in the Integrated Program in Neuroscience (Sep. 2022 – Current)

McGill University, Montréal, QC, CA

**M.S.** Biomedical Engineering (Sep. 2020 – Aug. 2022)

Ulsan National Institute of Science and Engineering (UNIST), Ulsan, Rep. of Korea

Summa cum laude, GPA 4.3/4.3

**B.S.** Electrical Engineering | Human Factors Engineering (Mar. 2014 – Feb. 2020)

Ulsan National Institute of Science and Engineering (UNIST), Ulsan, Rep. of Korea

Magna cum laude, GPA 3.65/4.3

## Research Experiences

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**The Auditory Cognitive Neuroscience Lab** (Sep. 2022 – Present)

Montreal Neurological Institute, McGill University

Advisor: Dr. Robert Zatorre

**BCILAB** (Jan. 2020 – Aug. 2022)

Dept. of Biomedical Engineering, UNIST, Ulsan, Rep. of Korea

Advisor: Dr. Sung-Phil Kim

-Development of Music-Imagery Brain-Computer Interface (BCI): Decoding Pitch Imagery from Electroencephalogram (EEG) and Closed-loop BCI Training

-Electrocorticogram (ECoG) data analysis on Korean speech Imagery/Articulation Task & Musical melody Perception-Imagery Task

**Artificial Intelligence Challengers Program (AICP)** (Aug.2021 – Dec. 2021 | Mar.2022 – Dec. 2022)

UNIST Innovative Education Center, Ulsan, Rep. of Korea

-AI-based defect prediction during the CFRP (Carbon Fiber Reinforced Plastic) drilling process with an industrial robot machining system

-Sensor and Image Data Preprocessing

## Teaching Experiences

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**Dance Instructor**, Montréal, QC, CA

Dance instructor of K-pop and Hiphop Choreography (Apr. 2023 – Current)

**Teaching Assistant**, UNIST, Ulsan, Rep. of Korea

Advanced Multivariate Data analysis and Data mining (Sep. – Dec. 2020)

Lecturer: Dr. Sung-Phil Kim

**Web Design Instructor**, Regent University, Accra, Rep. of Ghana

World Friends Korea Information & Communication Technology (ICT) (Jul. 2017)

**Dance Instructor**, Ulsan, Rep. of Korea

Hiphop Dance Instructor for 15 beginners (Sep. – Dec. 2019)

## Journal Publications

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- [1] **Miyoung Chung**, Taehyung Kim, Eunju Jeong, Chun-Kee Chung, June-Sic Kim, Oh-Sang Kwon, Sung-Phil Kim, "Decoding imagined musical pitch from human scalp electroencephalograms" (doi: [10.1109/TNSRE.2023.3270175](https://doi.org/10.1109/TNSRE.2023.3270175) )

## Peer-Reviewed Journal Publications

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- [1] Taehyung Kim, **Miyoung Chung**, Eunju Jeong, Yang Seok Cho, Oh-Sang Kwon, Sung-Phil Kim, "Neural representation of musical pitch in space" (under review)
- [2] Jae Gyeong Choi, Dongchan Kim, **Miyoung Chung**, Sunghoon Lim, Hyung Wook Park, "A multimodal one-dimensional convolutional neural network that predicts delamination during the carbon-fiber-reinforced plastic drilling process completed by an industrial robot machining system" (under review)

## Conference Proceedings

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- [1] Dongchan Kim, Jae Gyeong Choi, **Miyoung Chung**, Sunghoon Lim, Hyung Wook Park, "AI-based prediction of the hole quality in CFRP drilling with an industrial robot", Poster at the Korean Society of Manufacturing Technology 2021 Spring/Autumn Conference, Jeju, Rep. of Korea (Dec. 2021)
- [2] Jae Gyeong Choi, Dongchan Kim, **Miyoung Chung**, Sunghoon Lim, Hyung Wook Park, "A multimodal deep learning model for carbon fiber-reinforced plastic (CFRP) drilling process optimization", Oral presentation at 2022 ICS Conference, Florida, USA (Jan. 2022)
- [3] Jae Gyeong Choi, Dongchan Kim, **Miyoung Chung**, Sunghoon Lim, Hyung Wook Park, "A multimodal 1D convolutional neural network for delamination prediction in carbon fiber reinforced plastic (CFRP) drilling processes", Oral Presentation at 2022 Joint conference of Korean Operations Research and Management Science Society

& Korean Institute of Industrial Engineers, Jeju, Rep. of Korea (Jun. 2022)

## Awards & Honors

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### **Excellence Award (2<sup>nd</sup> Prize) / Dec. 2021**

AICP (Artificial Intelligence Challengers Program), UNIST Innovative Education Center, Ulsan, Rep. of Korea

### **Best paper award / Jul. 2022**

The Korean Society of Manufacturing Technology Engineers (한국생산제조학회)

### **Difference Fee Award / Mar. 2022**

Integrated Program in Neuroscience, McGill University, Montréal, QC, CA

### **UNIST Scholarship (Graduate) / Sep. 2020 – Aug. 2022** Ulsan

National Institute of Science and Technology (UNIST)

### **National S&T (Science & Technology) Scholarship / Mar. 2016 – Feb. 2020**

Korean Student Aid Foundation (KOSAF)

### **National Scholarship / Mar. 2014 – Dec. 2015**

Korean Student Aid Foundation (KOSAF)

## Research Interests

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Brain Mechanism in Musical Imagery

Musical Pitch Imagery

Music and Speech Cognition

Music and Speech Brain-Computer Interface

Neurofeedback Training

## Skills

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EEG Data Analysis (MATLAB, Python, R Studio)

Experiment Protocol Design

Neurofeedback System Design

Real-time System Design

Machine Learning / Deep Learning (Python Libraries: Scikit learn, Tensorflow, etc.)

Music Generation (Logic Pro X)

Web Design (HTML/CSS)

Programming (Python, C++ in basic level)