Jong Sung Park

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Education

Sogang University, Korea **February 2019**
Bachelor of Science Candidate in Life Science;

Indiana University, Bloomington **May 2021**
Masters in Computer Science at SICE

Indiana University, Bloomington **Estimated graduation date : May 2026**
Ph.D. in Intelligent Systems Engineering and Neuroscience

Pre-academic Experience

Microelectronics Lab, Sogang University, Research Assistant **Sep. 2018 to Dec. 2019**

- Learned about electronic efficiency of Neural Network models
- Advised on Spiked Neural Network, a more bio mimic form of Neural Networks
- Accumulated experience using BRIAN python library for SNN

Plant Molecular Biology Lab, Sogang University, Research Assistant **Dec. 2016 to August 2017**

- Performed DNA analysis on plant samples using SDS-PAGE and grinding techniques.
- Researched growth difference of *Oryza sativa japonica* in various environments
- Analyzed research data to recognize the activation/regression line of a specific gene.

Badminton Club, Sogang University, Economy Advisor **Sep. 2017 to Dec. 2017**

- Arranged spending funds on club events
- Advised group's plans on exercise on the semester
- Made changes in unreasonable club policies

Research related work experience

Swanson Lab, Indiana University, Software Engineer **Aug. 2020 to May. 2021**

- Researched different methods of detecting features in a retinal image
- Ran experiments on both control and clinical (glaucoma) image data
- Reformulated and analyzed the code base of the lab

Publications

***JS Park**, J Ha, S Thakur, A Badea, S Bakas, E Garyfallidis*
"Skull stripping with purely synthetic data" Arxiv (2025).

- Brain extraction using purely synthetic data without any prior anatomical labels
- Oral presentation during ISMRM 2025

***JS Park**, S Fadnavis, and E Garyfallidis.*
"Multi-scale V-net architecture with deep feature CRF layers for brain extraction." Communications Medicine (2024).

- Brain extraction and result refinement method using Deep Learning and CRFs
- Oral presentation during ISMRM 2023

*E Garyfallidis, S Fadnavis, **JS Park**, BQ Chandio, J Guaje, S Koudoro and N Anousheh*
ThetA--fast and robust clustering via a distance parameter. arXiv preprint arXiv:2102.07028 (2021).

- Fast clustering method with a continuous single parameter

*D Romero-Bascones, BQ Chandio, S Fadnavis, **JS Park**, S Koudoro, U Ayala, M Barrenechea and E Garyfallidis*
Bundleatlasing: unbiased population-specific atlasing of bundles in streamline space. Proc. ISMRM. 2022.

- Method to compute population representing bundle atlas without bias

Teaching Experience

Korea Student Aid Foundation, Youth Tutoring, June 2016 to August 2017

- Served as a mentor and tutor for the students of underprivileged backgrounds

- Coordinated key relationship-building projects in community
- Offered help in educational activities in summer vacation

Google Summer of Coding, Mentor, Summer 2021, Summer 2022, Summer 2023, Summer 2024

- Served as a mentor for an open source project
- The project lead to publication and code was provided open source

Image Processing for Medical Applications, Deep Learning Section, Spring 2022, 2023, 2024, 2025

- Covered basics of Deep Learning
- Introduced various ways Deep Learning can be used in Neuroimages
- Provided examples and homework on implementing a small model

Introduction to Neuroengineering, DIPY tutorials, Fall 2022

- Introduced DIPY, an open source diffusion MRI analysis tool
- Went through tutorials with base knowledge about the functions

Introduction to Neuroengineering, Deep Learning Section, Fall 2023, 2024

- Covered various Deep Learning model architectures
- Presented multiple medical imaging Deep Learning models
- Explained supervised and unsupervised medical image models through examples

Independent Studies, Project Leader, Spring 2023

- Provided a baseline for project ideas
- Supervised project progress

Introduction to Algorithm Design and Analysis, Teaching Assistant, Spring 2020

- Graded student's exams and work
- Conducted review sessions before exams

Program in Neuroscience, Teaching Assistant, Fall 2021 - Spring 2024

- Graded and evaluated student's work
- Worked in multiple courses, including *Neuroscience, Human Neuropsychology,* and *Psychobiology, Self, and Society*

Dipy Online Workshop 2021 - 2025

- Lead the brain segmentation tutorial
- Live answered attendees' questions about DIPY and diffusion MRI in general
- Continuing collaboration with the participants

Dipy Workshop (Boystown) Sep 2024

- Presented the preprocessing pipeline of DIPY
- Went through coding tutorials on installing and using DIPY

Reviews

ICLR 2022-2025, ICML 2023

Awards & Honors

2nd Place, Startup Competition hosted by Sogang University, **Jan. 2017**

- Served as a CFO on the award-winning team
- Created a project on developing a probiotic mouth sanitizer as a team

Dual Ph.D. program in Intelligent Systems Engineering and Neuroscience, full funding

- 4 years of funding for Assistant Instructorship from Program in Neuroscience
- Rebec Fellowship
- 1 year of funding for Research Assistantship from the Department of Optometry

College of Arts and Sciences Dissertation Research Fellowship **Aug. 2024**

- 1 year of funding for dissertation research from Indiana University

Caregiver Grant **June. 2024, June. 2025**

- Funding from Organization for Human Brain Mapping

Technical Skills

Computer proficiency

- Computer language : Python, C/C++
- Research related: Tensorflow, Pytorch, DIPY
- Lab related: SPSS – Bioinformatics analysis software

General laboratory

- SDS-PAGE, PCR, DNA/RNA extraction and analysis

Language

Korean, English

Active research area

- Brain Extraction (Supervised/Unsupervised)
- Anomaly detection in OCT images
- Deep Learning in brain MRI
- Overall processing of neuroimages
- Generalizable segmentation in neuroimages