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

CMC group, Baylor University, Research Assistant **June. 2025 to Aug. 2025**

- Studied various unsupervised or self-supervised denoising techniques
- Created an self-supervised denoising model for speckle noise of PS-OCT images

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

ThetA--fast and robust clustering via a distance parameter. arXiv preprint arXiv:2102.07028 (2021).

- Fast clustering method with a continuous single parameter

*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

*Evi MC Huijben, Maarten L Terpstra, Suraj Pai, Adrian Thummerer, Peter Koopmans, Manya Afonso, Maureen Van Eijnatten, Oliver Gurney-Champion, Zeli Chen, Yiwen Zhang, Kaiyi Zheng, Chuanpu Li, Haowen Pang, Chuyang Ye, Runqi Wang, Tao Song, Fuxin Fan, Jingna Qiu, Yixing Huang, Juhyung Ha, **Jong Sung Park**,*

Alexandra Alain-Beaudoin, Silvain Bériault, Pengxin Yu, Hongbin Guo, Zhanyao Huang, Gengwan Li, Xueru Zhang, Yubo Fan, Han Liu, Bowen Xin, Aaron Nicolson, Lujia Zhong, Zhiwei Deng, Gustav Müller-Franzes, Firas Khader, Xia Li, Ye Zhang, Cédric Hémon, Valentin Boussot, Zhihao Zhang, Long Wang, Lu Bai, Shaobin Wang, Derk Mus, Bram Kooiman, Chelsea AH Sargeant, Edward GA Henderson, Satoshi Kondo, Satoshi Kasai, Reza Karimzadeh, Bulat Ibragimov, Thomas Helfer, Jessica Dafflon, Zijie Chen, Enpei Wang, Zoltan Perko, Matteo Maspero
Generating synthetic computed tomography for radiotherapy: SynthRAD2023 challenge report

- Method to for style transfer of pelvis and brain data between modalities (CT, MRI, CBCT)

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