

# 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*

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## 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
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## 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
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## Publications

**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*

*Bundleatlas: unbiased population-specific atlas of bundles in streamline space. Proc. ISMRM. 2022.*

- Method to compute population representing bundle atlas without bias
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## 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*

- 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*

- 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*

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## Reviews

*ICLR 2022-2024, ICML 2023*

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## 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**

- Funding from Organization for Human Brain Mapping

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## 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

*Hobby*

Badminton, Writing Songs, Playing Games

*Active research area*

- Brain Extraction (Supervised/Unsupervised)

- Anomaly detection in OCT images
- Deep Learning in brain MRI
- Overall processing of neural medical images