Youngheun Jo

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Research interests

brain networks; network-based idiosyncratic features; higher-order functional brain interactions; graph theoretical applications; development; network-based cognitive/behavioral/disorder prediction

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Education & Positions

Indiana University - Bloomington, Bloomington, United States *2019 – present (defense scheduled April 2025)*

Dual PhD student in Department of Psychological and Brain Sciences & Cognitive Science Program

Computational and Cognitive Neuroscience track

Advisor: Richard F. Betzel

Asan Medical Center, Seoul, South Korea *2017 – 2019*

Research Assistant

Job description: Brain MR image preprocessing and data analysis

King's College London, London, UK *2015 – 2016*

MSc in Neuroscience (with Merits)

Advisor: Marco Catani

Thesis: Impaired networks underlying reading abilities in patients with Primary Progressive Aphasia presented at OHBM 2017

Sogang University, Seoul, South Korea *2011 – 2015*

BSc in Life Science (Magna cum Laude), BEng in Integrated Biotechnology (92.1 percentile)

Awards, Honors, Grants & Scholarships

OHBM Caregiver Grant ($500) *June 2024*

CNS-NRT Affiliate Fellowship ($5,000) *Summer 2023*

Indiana University – Bloomington, Complex Networks and Systems Program

CNS-NRT Affiliate Fellowship ($5,000) *Summer 2022*

Indiana University – Bloomington, Complex Networks and Systems Program

Arts and Science Graduate Research Assistant *01.2021 – present*

Indiana University – Bloomington, Department of Psychological and Brain Sciences

Teaching Assistant Fellowship *08.2019 – 12.2020*

Indiana University – Bloomington, Department of Psychological and Brain Sciences

Workshop Student Travel Grant ($500) *08.2019*

Advanced Computational Neuroscience Network (ACNN)

Asan Medical Center, Seoul, Korea

Asan Institute for Life Sciences, Asan Medical Center, Seoul, Korea, 2018-551 *08.2018 – 05.2019*

National Research Foundation of Korea (NGS), 2017-0407

National Research Foundation of Korea (NGS), 2018-0117

National Research Foundation of Korea (NGS), 2017-0314 *08.2017 – 07.2018*

National Research Foundation of Korea (NGS), 2018-0258

Undergraduate Student Scholarship Program (~$300/month for 3.5 years) *2012, 2013, 2014, 2015*

Korea Foundation for Advanced Studies 한국고등교육재단

Scholarship of Academic Performance (Grade A, ⅓ Tuition exemption) *2011, 2012*

Sogang University

Publications

Total citations: 1067, h-index = 12, i10-index = 13 (Google Scholar 12.2024, Web of Science, Clarivate Analytics IF)
*** first author, † co-first author**

In prep

[22] Parakkattu P, Jo Y, Faskowitz J, Podschun A, Markett S, Lorenzo-Luaces L, Betzel R (2025) Age-related differences in control energy of brain state transitions. *(In prep)*

[21] **Jo Y**, Chumin E, Betzel RF (2025) Overlapping edge communities across the human lifespan. *(In prep)*

[20] Wang J, **Jo Y**., Lu J, Betzel R.F., Zhu J., Tan K. (2025) Higher-Order Correlation for Constructing Edge Functional Connectivity. *(In prep)*

Under review

[19] Merritt H, Koch MK, **Jo Y**, Chumin E, Betzel RF (2024). Social 'envirotyping' the ABCD study contextualizes dissociable brain organization and diverging outcomes. *BioRxiv (Under review)*

[18] **Jo Y***, Tanner J, Seguin C, Faskowitz J, Betzel RF (2024) Variation in high-amplitude events across the human life span. *BioRxiv (Under review)*

Published

[17] Tanner JC, **Jo Y**, Merritt H, Parakkattu V, Bertolero M, Basset D, Betzel RF (2024) Non-assortative community structure in resting and task-evoked functional brain networks. *Nature Communications* (*In press*; 2022 IF: 16.6)

[16] Ragone E, Tanner J, **Jo Y**, Esfahlani FZ, Faskowitz J, Pope M, Coletta L, Gozzi A, Betzel RF (2023) Modular subgraphs in large-scale connectomes underpin spontaneous co-fluctuation "events" in mouse and human brains. *Communications Biology* (2022 IF: 5.9)

[15] Kwon M, Shim WH, **Jo Y**, Park S, Lim JS, Lee JH (2022) Pure prosodic type of primary progressive apraxia of speech mimicking nonfluent aphasia and later progressing to corticobasal syndrome. *Alzheimer Disease & Associated Disorders* (2024 IF: 2.357)

[14] Chumin EJ, Faskowitz J, Esfahlani FZ, **Jo Y**, Merritt H, Tanner JC, Cutts SA, Pope M, Betzel RF, Sporns O (2022) Cortico-subcortical interactions in overlapping communities of edge functional connectivity. *Neuroimage*, 250 118971 (2022 IF: 5.7)

[13] Esfahlani FZ, **Jo Y**, Puxeddu MG, Merritt H, Tanner JC, Greenwell S, Patel R, Faskowitz J, Betzel RF (2021) Modularity maximization as a flexible and generic framework for brain network exploratory analysis. *Neuroimage*, 244, 118607 (2021 IF: 7.4)

[12] **Jo Y***, Esfahlani FZ, Faskowitz J, Chumin EJ, Sporns O, Betzel RF (2021) The diversity and multiplexity of edge communities within and between brain systems. *Cell Reports*, 37 (7), 110032 (2022 IF: 9.995)

[11] **Jo Y***, Faskowitz J, Esfahlani FZ, Sporns O, Betzel RF (2021) Subject identification using edge-centric functional connectivity. *Neuroimage*, 238, 118204 (2021 IF: 7.4)

[10] Faskowitz J, Esfahlani FZ, **Jo Y**, Sporns O, Betzel RF (2020) Edge-centric functional network representations of human cerebral cortex reveal overlapping system-level architecture. *Nature Neuroscience*, 23 (12), 1644-1654 (2020 IF: 24.884)

[9] Kim MJ, Yum MS, **Jo Y**, Lee M, Kim EJ, Shim WH, Ko TS (2020) Delayed default mode and brainstem-thalamic networks development and altered fast oscillation dynamics in a rat model of cortical malformation. *Frontiers in Neuroscience,* 14, 711 (2020 IF: 4.309)

[8] Yoon HM*, **Jo Y***, Lee JS, Ko TS, Koo JH, Shim WH, Yum MS (2020) Disrupted functional and structural connectivity in Angelman syndrome. *American Journal of Neuroradiology* (2020 IF: 3.825)

[7] Esfahlani FZ, **Jo Y**, Faskowitz J, Byrge L, Kennedy DP, Sporns O, Betzel RF (2020) High-amplitude co-fluctuations in cortical activity drive functional connectivity. *Proceedings of the National Academy of Sciences*, 117 (45) 28393-28401 (2020 IF: 11.205)

[6] Park JE, Kim HS, **Jo Y**, Yoo RE, Choi SH, Nam SJ, Kim JH (2020) Radiomics prognostication model in glioblastoma using diffusion- and perfusion-weighted MRI. *Scientific Reports*, 10 (1), 1-9 (2020 IF: 4.379)

[5] Lee MK, Park JE, **Jo Y**, Park SY, Kim SJ, Kim HS (2020) Advanced imaging parameters improve the prediction of diffuse lower-grade gliomas subtype, IDH mutant with no 1p19q codeletion: added value to the T2/FLAIR mismatch sign. *European radiology*, pp 1-11 (2020 IF: 5.315)

[4] Lee JB, Park JE, Jung SC, **Jo Y**, Kim D, Kim HS, Choi CG, Kim SJ, Kang DW (2020) Repeatability of amide proton transfer-weighted signals in the brain according to clinical condition and anatomical location. *European Radiology*, 30 (1), 346-356 (2020 IF: 5.315)

[3] Park SY, Park JE, **Jo Y**, Nam SJ, Chun SM, Kim JH, Kim HS (2019) Prediction of Core Signaling Pathway using Diffusion- and Perfusion-based MR Radiomics and Next Generation Sequencing in IDH wild type Glioblastoma. *Radiology* (2019 IF: 7.931)

[2] Kim JY, Park JE, **Jo Y**, Shim WH, Nam SJ, Kim JH, Yoo RE, Choi SH, Kim HS (2018) Incorporating diffusion- and perfusion-weighted MRI into a radiomics model improves diagnostic performance for pseudoprogression in glioblastoma patients. *Neuro-Oncology*, noy133 (2018 IF: 10.091)

[1] **Jo Y***, Kim JM, Jeon SB, Park SU, Kam HJ, Shim WH, Kim SH (2018) Sudden bispectral index reduction and suppression ratio increase associated with bradycardia in patient undergoing breast conserving surgery. *Journal of Neurocritical Care*, 11(1): 39-42

Talks & Posters

Invited Talks

Functional MRI Speaker Series, University of Michigan, Ann Arbor *11.2024*

Topic: An edge-centric perspective on dynamic brain networks

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea *06.2024*

Topic: Brain networks and their edges

Sungkyunkwan University, Suwon, South Korea *05.2024*

Topic: Brain networks and their edges

Department of Statistics, University of Michigan, Ann Arbor *04.2024*

Topic: Brain networks and their edges

OnNeuro, Center for Cognitive and Behavioral Brain Imaging (CCBBI), Ohio State University - Link to talk *09.2023*

Topic: Variation in high-amplitude events across the human lifespan (Virtual)

Organization for Human Brain Mapping Montreal (OHBM), Canada - Oral session *07.2023*

Topic: Variation in high-amplitude events across the human lifespan

Biological Research Information Center (BRIC) Webinar**,** Postech, South Korea - Link to talk *01.2021*

Topic: High-amplitude cofluctuations in cortical activity drive functional connectivity (Virtual)

Presented Posters

Jo Y, Tanner JC, Faskowitz J, Betzel RF: Variation in high-amplitude events across the human lifespan

Society for Neuroscience, Chicago, USA *10.2024*

Jo Y, Chumin EJ, Betzel RF: Edge communities across the human lifespan

Flux: The Society for Developmental Cognitive Neuroscience, Baltimore, USA *09.2024*

Jo Y, Merritt H, Faskowitz J, Betzel RF: Hierarchical communities of high-amplitude co-fluctuations in extremity disuse

Organization for Human Brain Mapping, Seoul, South Korea *06.2024*

Jo Y, Tanner JC, Faskowitz J, Betzel RF: Variation in high-amplitude events across the human lifespan

Organization for Human Brain Mapping, Montreal, Canada *07.2023*

Jo Y, Faskowitz, J, Esfahlani FZ, Sporns O, Betzel RF: Subject identification using edge-centric functional connectivity

Psychological and Brain Sciences project showcase, Indiana University - Bloomington, USA *03.2021*

Jo Y, Faskowitz, J, Esfahlani FZ, Sporns O, Betzel RF: Improved fingerprinting using edge-centric functional connectivity

Organization for Human Brain Mapping, Montreal, Canada *06.2020*

Skills

Natural languages	Korean (native), English, French
Programming languages	MATLAB, Python, R, LaTeX, JavaScript, HTML, Bash, Julia
Software	fMRIprep, MRtrix3, FreeSurfer, AFNI, SPM

Services and Societies

Ad hoc Journal Review

Communications Biology *Spring 2024*

Neurobiology of Aging *Spring 2024*

Network Science *Fall 2020*

Services

Organization for Human Brain Mapping (OHBM) *12.2024*

Abstract reviewer

Organization for Human Brain Mapping (OHBM) *12.2023*

Abstract reviewer

Imaging Research Facility (IRF), Indiana University – Bloomington *Fall 2020*

Research Assistant

Job description: Implementing fMRIPrep (fMRI data pre-processing) Software

Sogang LightHouse Program *08.2013 – 12.2013*

Volunteer tutor for low-income household children

Academic Societies

Korean Society for Human Brain Mapping 대한뇌기능매핑학회 *2024*

Brain Engineering Society of Korea 한국뇌공학회 *2024*

Fetal, Infant, & Toddler Neuroimaging Group (FIT'NG) *2024*

Graduate Student Coalition, *Indiana University - Bloomington* *2019 – present*

Computational and Network Neuroscience Reading Group, *Indiana University - Bloomington* *Fall 2022 – present*

Organization for Human Brain Mapping (OHBM) *2018 – present*

Society for Neuroscience (SfN) *2019 – 2020, 2024*

FLUX: The Society for Developmental Cognitive Neuroscience *2024*

Teaching experience & Pedagogy

***assistant instructor, † lead instructor/organizer, ^ undergraduate, ‡ graduate or above**

Teaching

*^Statistical techniques (PSY-K300), Indiana University – Bloomington *Spring 2020*

*^Introduction to Psychological and Brain Sciences (PSY-P155) *Fall 2019*

Workshops

†^‡Network Neuroscience Workshop, *Indiana University - Bloomington* *04.2023*

Four day workshop on introducing network neuroscience and its key concepts, with hands-on coding

†‡ Image Processing Workshop, *Imaging Research Facility, Indiana University - Bloomington* *12.2020*

Utilizing XCPEngine**,** MRtrix3, and fMRIprep for functional MRI preprocessing and data analysis

References

Richard F. Betzel, PhD - *Academic advisor* rbetzel@indiana.edu

Associate Professor, Indiana University – Bloomington

Department of Psychological & Brain Sciences, Program in Cognitive Science

Olaf Sporns, PhD - *Academic committee member* osporns@indiana.edu

Distinguished Professor, Indiana University – Bloomington

Departments of Psychological & Brain Sciences and Informatics, Program in Cognitive Science

Yong-Yeol Ahn, PhD - *Academic committee member* yyahn@indiana.edu

Professor, Indiana University – Bloomington

Luddy School of Informatics, Computing, and Engineering

Daniel P. Kennedy, PhD - *Academic committee member* dpk@indiana.edu

Professor, Indiana University – Bloomington

Department of Psychological & Brain Sciences, Program in Neuroscience and Cognitive Science

Director, Imaging Research Facility (IRF)