

Curriculum Vitae

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Education:

2000.8	Ph.D.	Biomedical Engineering	Seoul National University
1995.2	M.S.	Biomedical Engineering	Seoul National University
1993.2	B.S.	Electrical Engineering	Seoul National University

Postdoctoral Training:

2002 - 2004	Research Fellow, Surgical Planning Laboratory, MRI Division, Department of Radiology, Brigham and Women's Hospital, Harvard Medical School
2001 - 2004	Research Fellow, Clinical Neuroscience Division, Laboratory of Neuroscience, Boston VA Health Care System-Brockton Division, Department of Psychiatry, Harvard Medical School
2001	Brain Korea 21 Postdoctoral fellow in the Medical Research Center, Seoul National University
2000	Department of Biomedical Engineering, Seoul National University

Academic Appointment:

2017-	Director, Center for Systems and Translational Brain Sciences, Institute of Human Complexity and Systems Science, Yonsei University
2014-	Professor, Department of Nuclear Medicine, Yonsei University College of Medicine
2014-	Adjunct Professor, BK21 PLUS Project for Medical Science, Departments of Radiology and Psychiatry, Yonsei University College of Medicine
2014-	Adjunct Professor, Department of Cognitive Science, Yonsei University
2012-2014	Associate Professor, Department of Nuclear Medicine, Yonsei University College of Medicine
2009-2012	Associate Professor, Department of Diagnostic Radiology, Yonsei University College of Medicine Division of Nuclear Medicine, Severance Hospital, Yonsei University Health System Adjunct Professor, Department of Psychiatry, Yonsei University College of Medicine
2005-2008	Assistant Professor, Department of Diagnostic Radiology, Yonsei University College of Medicine Division of Nuclear Medicine, Severance Hospital, Yonsei University Health System
2004	Director, Laboratory of Molecular Neuroimaging Technology
2004	Instructor, Department of Diagnostic Radiology, Yonsei University College of Medicine Division of Nuclear Medicine, Severance Hospital, Yonsei University Health System

Academic Careers:

2012-2013 Honorary visiting research fellow, Wellcome trust center for neuroimaging, University College London, UK.

Professional Societies:

1993-	Member of Korea Society of Medical and Biological Engineering
2001-	Member of Organization of Human Brain Mapping
2004-	Member of Society for Neuroscience
2004-	Member of International Society for Magnetic Resonance in Medicine (ISMRM)
2002-	Member of Korean Society of Human Brain Mapping (KHBM)
2015-2016	Secretary of General Affairs of KHBM
2017-2020	Research Committee Chair of KHBM
2021-2022	Planning Director of KHBM
2023-	Chairman of the board of KHBM,
2023-	Local organization committee chair for Organization for Human Brain Mapping 2024.
2023-	Audit committee of The Korean Society for Cognitive Science

Awards and Honors:

2023	Golden Citations Award, Yonsei University
2009	Research Excellence Award, Yonsei University
2009	Young Researcher Award, Yonsei University College of Medicine
2008	Siemens Academic Excellence Award, Korean Society of Human Brain Mapping
2000	Young Investigator Program Award, Korea Research Foundation
1992-1999	Industry-Academy Cooperation Scholarship Awards, SAMSUNG Electronics

Major Research Interests:

1. Integrating systems and theoretical neurosciences to model neuro-cognition and disease mechanism.
2. Optimal brain control based on brain theory and computational modelling of brain disease, computational neuropharmacology.
3. Facilitating network reorganization using brain decoding (fMRI, EEG), neuromodulation (TMS, tACS), neurofeedback.
4. Neurobiological research on interoception and emotional flexibility, linguistic, communicative brains, and digital therapy.
5. Artificial intelligence for medical images, molecular brain science based on nuclear medicine.

Publication:

Peer-reviewed publications: International Journal (*corresponding author, †equally contributed authors, #cover page)

1. Eo, J., Kang, J., Youn, T., Park, H.J.*, 2023. Neuropharmacological computational analysis of longitudinal electroencephalograms in clozapine-treated patients with schizophrenia using hierarchical dynamic causal modeling. *Neuroimage*, 275, 120161.
2. Baek, J., Park, H.J.*, 2023. Bayesian adaptive method for estimating speed-accuracy tradeoff functions of multiple task conditions. *Behav Res Methods*. DOI: 0.3758/s13428-023-02192-4
3. Park, H.J.*, Kim, S.H., Choi, J.Y., Cha, D., 2023. Human-machine cooperation meta-model for clinical diagnosis by adaptation to human expert's diagnostic characteristics. *Sci Rep* 13, 16204.
4. Lee, D., Park, H.J.†*, 2022. A populational connection distribution map for the whole brain white matter reveals ordered cortical wiring in the space of white matter. *Neuroimage*, 254, 119167.
5. You, K., Park, H.J.†, 2022. Geometric learning of functional brain network on the correlation manifold. *Sci Rep* 12, 17752.
6. Pae C, Kim M. J., Chang W. S., Jung H. H., Chang K. W., Eo J., Park H. J. †, Chang J. W. †, Differences in intrinsic functional networks in patients with essential tremor who had good and poor long-term responses after thalamotomy performed using MR-guided ultrasound, *Journal of Neurosurgery*, 2022.1-11
7. Choi, J.C., Park, H.J., Park, J.A., Kang, D.R., Choi, Y.S., Choi, S., Lee, H.G., Choi, J.H., Choi, I.H., Yoon, M.W., Lee, J.M., Kim, J., 2022. The increased analgesic efficacy of cold therapy after an unsuccessful analgesic experience is associated with inferior parietal lobule activation. *Sci Rep* 12, 14687.
8. Go D, Jeon M, Lee S, Jin IH, Park H-J*, Analyzing differences between parent- and self-report measures with a latent space approach, 2022, *PLOS One*, 7(6): e0269376. <https://doi.org/10.1371/journal.pone.0269376>.
9. Cha, D., Pae, C., Lee, S.A., Na, G., Hur, Y.K., Lee, H.Y., Cho, A.R., Cho, Y.J., Han, S.G., Kim, S.H., Choi, J.Y., Park, H.J.*, 2021. Differential Biases and Variabilities of Deep Learning-Based Artificial Intelligence and Human Experts in Clinical Diagnosis: Retrospective Cohort and Survey Study. *JMIR Med Inform* 9, e33049.
10. Park, H.J.*, Eo, J., Pae, C., Son, J., Park, S.M., Kang, J., 2021. State-Dependent Effective Connectivity in Resting-State fMRI. *Front Neural Circuits* 15, 719364.
11. Lee, D., Quattrochi Knight, E., Song, H., Lee, S., Pae, C., Yoo, S., Park, H.J.*, 2021. Differential structure-function network coupling in the inattentive and combined types of attention deficit hyperactivity disorder. *PLoS One* 16, e0260295.
12. Nam, H., Pae, C., Eo, J., Oh, M.K., Park, H.J.*, 2021. Inter-species cortical registration between macaques and humans using a functional network property under a spherical demons framework. *PLoS One* 16, e0258992.
13. Baek, J.†, Park, H.J.*†, 2021. Bayesian adaptive model estimation to solve the speed accuracy tradeoff problem in psychophysical experiments. *Sci Rep* 11, 18264.
14. Kang, J., Eo, J., Lee, D.M., Park, H.J. †*, 2021. A computational framework for optimal control of a self-adjustive neural system with activity-dependent and homeostatic plasticity. *Neuroimage* 230, 117805.
15. Jeong, S.O., Kang, J., Pae, C., Eo, J., Park, S.M., Son, J., Park, H.J.*, 2021. Empirical Bayes estimation of pairwise maximum entropy model for nonlinear brain state dynamics. *Neuroimage* 244, 118618.
16. Park, H.J.*, Kang, J., 2021. A Computational Framework for Controlling the Self-Restorative Brain Based on the Free Energy and Degeneracy Principles. *Front Comput Neurosci* 15, 590019.
17. You, K., Park, H.J.†*, 2021. Re-visiting Riemannian geometry of symmetric positive definite matrices for the analysis of functional connectivity. *Neuroimage* 225, 117464.
18. Kang, J.†, S.O. Jeong†, C. Pae, and H. J. Park*†. Bayesian Estimation of Maximum Entropy Model for Individualized Energy Landscape Analysis of Brain State Dynamics. *Human Brain Mapping*, 2021, 42(11), 3411-3428.
19. Kang, J., Jung, K., Eo, J., Son, J., Park, H.J.*, 2020. Dynamic causal modeling of hippocampal activity measured via mesoscopic voltage-sensitive dye imaging. *Neuroimage* 213, 116755.
20. Song, H., Yi, D.J., Park, H.J., 2020. Validation of a mobile game-based assessment of cognitive control among children and adolescents. *PLoS One* 15, e0230498.

21. Yoo, S., Choi, H.H., Choi, H.Y., Yun, S., Park, H., Bahng, H., Hong, H., Kim, H., Park, H.J.*, 2020. Neural correlates of anxiety under interrogation in guilt or innocence contexts. *PLoS One* 15, e0230837.
22. Kang, J., Pae, C., Park, H.J.*, 2019. Graph-theoretical analysis for energy landscape reveals the organization of state transitions in the resting-state human cerebral cortex. *PLoS One* 14, e0222161.
23. Jung, K., Kang, J., Chung, S., Park, H.J.*, 2019. Dynamic causal modeling for calcium imaging: Exploration of differential effective connectivity for sensory processing in a barrel cortical column. *Neuroimage*, 201, 116008.
24. Cha, D., Pae, C., Seong, S.B., Choi, J.Y.* , Park, H.J.*, 2019. Automated diagnosis of ear disease using ensemble deep learning with a big otoendoscopy image database. *EBioMedicine*, 45, 606-614.
25. Lee, D., Jang, C., Park, H.J.*, Neurofeedback learning for mental practice rather than repetitive practice improves neural pattern consistency and functional network efficiency in the subsequent mental motor execution. 2019, *Neuroimage*, 188, 680-693.
26. Yu R, Park HJ*, Cho H, Ko A, Pae C, Oh MK, Kang HC, Kim HD, Park EK, Shim KW, Kim DS, Lee JS*. Interregional metabolic connectivity of 2-deoxy-2-[18 F]fluoro-D-glucose positron emission tomography in vagus nerve stimulation for pediatric patients with epilepsy: A retrospective cross-sectional study. 2018, *Epilepsia*, 59:2249–2259.
27. Bang M. Park H*, Pae C, Park K, Lee E, Lee SK, An SK, Aberrant cerebro-cerebellar functional connectivity and minimal self-disturbance in individuals at ultra-high risk for psychosis and with first-episode schizophrenia, 2018, *Schizophrenia Research*, 202:138-140.
28. Seong SB, Pae C, Park HJ*, Geometric Convolutional Neural Network for Analyzing Surface-Based Neuroimaging Data, *Front. Neuroinform.*, vol. 12, 42, [doi: 10.3389/fninf.2018.00042](https://doi.org/10.3389/fninf.2018.00042)
29. Park JS, Chun JW, Park HJ, Kim ES, Kim JJ, Involvement of amygdala-prefrontal dysfunction in the influence of negative emotion on the resolution of cognitive conflict in patients with schizophrenia, *Brain and Behavior*, 2018. DOI: 10.1002/brb
30. Park HJ*, Friston K., Pae C., Park B., Razi A., 2018. Dynamic effective connectivity in resting state fMRI. *Neuroimage* 180, 594-608
31. Jung K, Friston K, Pae C, Choi H, Tak S, Choi YK, Park B, Park C, Cheong C, Park HJ*, Effective connectivity during working memory and resting states: a DCM study, 2018, *Neuroimage*, 69, 485-495.
32. Cho H, Kim CH, Knight E, Oh HW, Park B, Kim DG, Park HJ*, Changes in brain metabolic connectivity underlie autistic-like social deficits in a rat model of autism spectrum disorder, 2017, *Sci Rep*, 7: 13213 | DOI:10.1038/s41598-017-13642-3.
33. Chun, J.W., Park, H.J., Kim, D.J., Kim, E., Kim, J.J., 2017. Contribution of fronto-striatal regions to emotional valence and repetition under cognitive conflict. *Brain Res* 1666, 48-57.
34. Oh, J., Chun, J.W., Kim, E., Park, H.J., Lee, B., Kim, J.J., 2017. Aberrant neural networks for the recognition memory of socially relevant information in patients with schizophrenia. *Brain Behav* 7, e00602.
35. #Kang J, Pae J, Park HJ*, Energy landscape analysis of the subcortical brain network unravels system properties beneath resting state dynamics, *Neuroimage*, 2017; 149:153-164.
36. Lee D, Pae C, Lee JD, Park ES, Cho SR, Um M-H, Lee S-K, Oh M-K, Park H-J*, Analysis of structure-function network decoupling in the brain systems of spastic diplegic cerebral palsy, *Human Brain Mapp*. 2017, 38(10):5292-5306.
37. Park B, Eo J, Park H*, Structural brain connectivity constrains within-a-day variability of direct functional connectivity, 2017, *Front. Hum. Neurosci*. 11:408 doi: 10.3389/fnhum.2017.00408
38. Lee D, Yun S, Jang C, Park H-J*, Multivariate Bayesian decoding of single-trial event-related fMRI responses for memory retrieval of voluntary actions, 2017, *PLoS ONE* 12(8). <https://doi.org/10.1371/journal.pone.0182657>
39. Kim J, Choi J-Y, Ur J, Park HJ*, Comparative evaluation of the white matter fiber integrity in subjects with pre and postlingual deafness, *Neuroreport*, 2017, 8;28(16):1103-1107.
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41. Park HJ*, Pae C, Friston K, Jang C, Razi A, Zeidman P, Chang WS, Chang JW, (2017) Hierarchical dynamic causal modelling of resting-state fMRI reveals longitudinal changes in effective connectivity in the motor system after thalamotomy for essential tremor, *Front. Neurol*. 8:346. doi: 10.3389/fneur.2017.00346
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43. Jang C, Park HJ*, Chang WS, Pae C, Chang JW. Immediate and Longitudinal Alterations of Functional Networks after Thalamotomy in Essential Tremor. *Front Neurol* 2016;7:184.
44. Jeong SO, Pae C, Park HJ*. Connectivity-based change point detection for large-size functional networks. *Neuroimage* 2016;143:353-63.
45. Kim EJ, Kyeong S, Cho SW, Chun JW, Park HJ, Kim J, et al. Happier People Show Greater Neural Connectivity during Negative Self-Referential Processing. *PloS one*. 2016;11(2):e0149554.
46. Kim E, Kyeong S, Cheon KA, Park B, Oh MK, Chun JW, Park HJ, Kim J, Kim J, Dolan RJ, Kim JJ. Neural responses to affective and cognitive theory of mind in children and adolescents with autism spectrum disorder. *Neurosci Lett*. 2016;621:117-25.
47. Lee D., Jang, C., Park, H.J.*, 2015, Multivariate Detrending of fMRI Signal Drifts for Real-time Multiclass Pattern Classification, *Neuroimage* 108, 203-213.
48. Nam H., Lee Y.J., Jeong B., Park H.J., Yoon J., 2015, Motion correction of magnetic resonance imaging data by using adaptive moving least squares method, *Magnetic Resonance Imaging*, 33(5), 659-670
49. Park HJ, Park B, Kim HY, Oh MK, Kim JI, Yoon M, Lee JD, Chang JW, A Network Analysis of ¹⁵O-H₂O PET Reveals Deep Brain Stimulation Effects on Brain Network of Parkinson's Disease 2015, *Yonsei Medical Journal*, 56(3): 726-736.
50. Park, I.H., Chun, J.W., Park, H.J., Koo, M.S., Park, S., Kim, S.H., Kim, J.J., 2015. Altered cingulo-striatal function underlies reward drive deficits in schizophrenia. *Schizophr Res*. 161, 229-236.

51. Park, J.Y., Park, H.J., Kim, D.J., Kim, J.J., 2014. Positive symptoms and water diffusivity of the prefrontal and temporal cortices in schizophrenia patients: a pilot study. *Psychiatry Res* 224, 49-57.
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53. Park, B., Kim, D.S., Park, H.J.*, 2014. Graph independent component analysis reveals repertoires of intrinsic network components in the human brain. *PLoS One* 9, e82873.
54. Kyeong, S., Kim, E., Park, H.J., Hwang, D.U., 2014. Functional network organizations of two contrasting temperament groups in dimensions of novelty seeking and harm avoidance. *Brain Res.* 1575, 33-44.
55. Lee, S.K., Chun, J.W., Lee, J.S., Park, H.J., Jung, Y.C., Seok, J.H., Kim, J.J., 2014a. Abnormal neural processing during emotional salience attribution of affective asymmetry in patients with schizophrenia. *PLoS One* 9, e90792.
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57. Kang, J.I.†, Park, H.J.†, Kim, S.J., Kim, K.R., Lee, S.Y., Lee, E., An, S.K., Kwon, J.S., Lee, J.D., 2014. Reduced Binding Potential of GABA-A/Benzodiazepine Receptors in Individuals at Ultra-high Risk for Psychosis: An [18F]-Fluorofluzamazenil Positron Emission Tomography Study. *Schizophr Bull* 40, 548-557.
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59. Park, H.J., Kim, C.H., Park, E.S., Park, B., Oh, S.R., Oh, M.K., Park, C.I., Lee, J.D., 2013b. Increased GABA-A receptor binding and reduced connectivity at the motor cortex in children with hemiplegic cerebral palsy: a multimodal investigation using 18F-fluorofluzamazenil PET, immunohistochemistry, and MR imaging. *J Nucl Med* 54, 1263-1269.
60. Park, H.J.*, Friston, K., 2013. Structural and functional brain networks: from connections to cognition. *SCIENCE* 342, 1238411.
61. Park, B., Ko, J.H., Lee, J.D., Park, H.J.*, 2013c. Evaluation of node-inhomogeneity effects on the functional brain network properties using an anatomy-constrained hierarchical brain parcellation. *PLoS One* 8, e74935.
62. Lee, J.S., Lee, J.D., Park, H.J., Oh, M.K., Chun, J.W., Kim, S.J., Kim, E., Kim, J.J., 2013. Is the GABA System Related to the Social Competence Improvement Effect of Aripiprazole? An (18)F-Fluorofluzamazenil PET Study. *Psychiatry Investig* 10, 75-80.
63. Kim, D.J., Park, B., Park, H.J.*, 2013. Functional connectivity-based identification of subdivisions of the basal ganglia and thalamus using multilevel independent component analysis of resting state fMRI. *Hum Brain Mapp* 34, 1371-1385.
64. Jang, G.†, Yoon, S.A., Lee, S.E., Park, H., Kim, J., Ko, J.H., Park, H.J.*†, 2013. Everyday conversation requires cognitive inference: neural bases of comprehending implicated meanings in conversations. *Neuroimage* 81, 61-72.
65. Choi, S.H., Lee, S.H., Park, H.J., Chun, J.W., Kang, J.I., Kim, J.J., 2013. Perceived patient-parent relationships and neural representation of parents in schizophrenia. *Eur Arch Psychiatry Clin Neurosci* 263, 259-269.
66. Park, B., Kim, J.I., Lee, D., Jeong, S.O., Lee, J.D., Park, H.J.*, 2012. Are brain networks stable during a 24-hour period? *Neuroimage* 59, 456-466.
67. Park, J.Y., Lee, J., Park, H.J., Kim, J.J., Namkoong, K., Kim, S.J., 2012. Alpha amplitude and phase locking in obsessive-compulsive disorder during working memory. *Int J Psychophysiol* 83, 1-7.
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Book chapter

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2. Hae-Jeong Park, Dae-Jin Kim, Seung Koo Lee, 박해정, 김대진, 이승구. “확산강조영상과 확산텐서영상 Diffusion Weighted Imaging and Diffusion Tensor Imaging”. *Magnetic Resonance Imaging, Ch. 14*, Korean society of magnetic resonance in medicine 자기공명영상학, 제 14 장, pp.221-241, 대한자기공명영상학회 위임, 일조각, 서울, 2008.

Contribution to Brain Research Community (Developed software)

1. CdrSPM 1.0: statistical comparison toolbox for EEG source localizations
2. DoDTI: Automated analysis of diffusion tensor MRI toolbox (<http://neuroimage.yonsei.ac.kr/dodti>)
3. ViStim: Visual stimulator for PET, fMRI and ERP
4. PETICA: ICA analysis toolbox for multiple PET images
5. Neuroan: software for neuroimage analysis
6. MNET: network analysis for structural and functional brain network

Reviewer:

Science, Brain, Neuroimage, Human Brain Mapping, Brain connectivity, Medical image analysis, PLOS one, etc.