

June Christoph Kang

Affective Neuroscientist

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Professional Profile

Affective neuroscientist with expertise in mood disorders and human emotion research using advanced neuroimaging, multimodal psychophysiology, and non-invasive brain stimulation methodologies. Demonstrated leadership in conducting interdisciplinary collaborative research across clinical and engineering domains as PI and Co-PI. Proven track record of competitive grant acquisition and publication in peer-reviewed journals including *Neuromodulation*, *Journal of Neurodevelopmental Disorders*, *European Journal of Psychotraumatology*, *Psychonomic Bulletin and Review*, and *Psychoneuroendocrinology*.

Research Specialisation

Primary Research Interests

- Human empathy and emotional processing
- Affective neuroscience and neuroplasticity
- Mood disorders and depression neurobiology
- Human-robot interaction with affective dimensions

Technical Expertise

- Multimodal neuroimaging (structural and functional MRI, EEG, diffusion tensor imaging)
- Psychophysiological assessment (heart rate variability, electrodermal activity, autonomic regulation)
- Non-invasive brain stimulation techniques (taVNS, tDCS, tACS)
- Facial expression analysis and emotion recognition
- Neuropsychological assessment and psychometric validation

Education

Doctor of Philosophy in Biomedical Science

March 2013 – February 2018

Korea University, Seoul, Republic of Korea

Dissertation: *Altered brain connectivity and structures in bipolar disorder and their effect on trait empathy*

Master of Arts in Clinical Psychology

March 2010 – February 2013

Korea University, Seoul, Republic of Korea

Dissertation: *Individual differences in empathy: an investigation utilising emotional priming methodologies*

Bachelor of Arts in Psychology

March 2006 – February 2010

Korea University, Seoul, Republic of Korea

Academic and Research Positions

Research Professor

March 2018 – Present

Department of Brain and Cognitive Engineering, Korea University

Lead principal investigator for multiple national research grants. Supervision of postgraduate

researchers and coordination of multisite collaborative neuroscience projects. Management of neuroimaging laboratories and psychophysiological assessment facilities.

Lecturer in Neuroimaging and Data Science

March 2024 – June 2025

Department of Data Science, Hanyang University

Delivery of specialist neuroimaging analysis coursework to postgraduate students. Curriculum development and assessment of advanced quantitative methodologies in neuroscience.

Lecturer in Social and Affective Neuroscience

March 2022 – February 2023

Department of Psychology, Yonsei University

Teaching and examination in cognitive and social neuroscience. Student supervision and research methodology guidance.

Lecturer in Biomedical Science

March 2017 – February 2018

Department of Biomedical Science, Korea University

Neuroscience coursework delivery and white matter analysis methods instruction.

Peer-Reviewed Publications

First Author and Corresponding Author Publications

- [1] **J. C. Kang**. “Association Between White Matter Tract Microstructure and Cognitive, Affective, and Somatic Empathy in Children: An Exploratory TRACULA-Based Diffusion MRI Study”. In: *Brain and Behavior* (2026). In press.
- [2] **J. C. Kang**. “Emotion Ontology from the Perspective of Developmental Robotics: A Review”. In: *IEEE Access* 14 (2026), pp. 68687–68703.
- [3] **J. C. Kang**. “Just-in-Time Adaptive Interventions in Digital Mental Health Care: A Framework for Psychiatric Conditions”. In: *IEEE Access* 14 (2026), pp. 78026–78039.
- [4] **J. C. Kang**. “The Tachikoma Effect: Aggregation of Independent Agents, Not Information Sharing, Aligns LLM Collectives with Majority Human Moral Judgment”. In: *AI & SOCIETY* (2026). In press.
- [5] **J. C. Kang**. “Transcutaneous auricular vagus nerve stimulation increases empathic choice toward outgroup negative emotions”. In: *Acta Neuropsychiatrica* (2026). In press.
- [6] **J. C. Kang**, J. Y. Ng, M. Kaiser, H. Choi, J-J Song, and J Jung. “Transcutaneous auricular vagus nerve stimulation enhances emotional bias towards happiness in healthy young adults: A comparative study of electrical and ultrasound stimulation”. In: *Neuromodulation: Technology at the Neural Interface* (2026), pp. 1–1.
- [7] A. Kim, Y.B. Kang, **J. Kang**, and B. J. Ham. “Neuroanatomical Signatures of Suicide Attempts in Major Depressive Disorder”. In: *Psychiatry Research: Neuroimaging* (2026), p. 112192.
- [8] H. Cho, **J. C. Kang**, H. J. Park, Y. H. Park, Y. E. Park, I. Hwang, and H. J. Kang. “The impact of intimate partner violence on facial emotion recognition amongst Korean baby boomers”. In: *European Journal of Psychotraumatology* 16.1 (2025), p. 2474890.
- [9] H.-M. Kim, **J. C. Kang**, Y.-H. Ko, C. Shin, and H.-K. Yoon. “Physiological responses to video conferencing exposure in individuals with social anxiety: An iPPG-based heart rate variability analysis”. In: *Acta Neuropsychiatrica* (2025), pp. 1–29.
- [10] H. S. Ryu, **J. C. Kang**, and D. Y. Kwon. “Structured speech tasks reveal temporal facial variability as an objective measure in de-novo Parkinson’s disease patients”. In: *Parkinsonism & Related Disorders* 135 (2025), p. 107840.
- [11] **J. C. Kang**, S. Chi, Y. E. Mok, J. A. Kim, S. H. Kim, and M. S. Lee. “Diffusion indices alteration in major white matter tracts of children with tic disorder using TRACULA”. In: *Journal of Neurodevelopmental Disorders* 16.1 (2024), p. 40.

- [12] H. M. Kim, C. Kang, B. Chae, **J. C. Kang**, and H. K. Yoon. “Exploring brainstem structural abnormalities: Potential biomarkers for panic disorder”. In: *Experimental Neurobiology* 33.1 (2024), pp. 18–24.
- [13] **J. Kang**, A. Kim, Y. Kang, K. M. Han, and B. J. Ham. “The indirect effect of prefrontal grey matter volume on suicide attempts amongst individuals with major depressive disorder”. In: *Experimental Neurobiology* 31.2 (2022), pp. 97–104.
- [14] **J. Kang**, Y. E. Park, and H. K. Yoon. “Feeling blue and getting red: An exploratory investigation of the effect of colour in the processing of emotion information”. In: *Frontiers in Psychology* 13 (2022), p. 515215.
- [15] B. Chae, **J. Kang**, C. Shin, Y. H. Ko, and H. K. Yoon. “Insomnia in emotional labour: Its role in autonomic nervous system regulation”. In: *Psychiatry Investigation* 18.9 (2021), p. 889.
- [16] W. S. W. Hyung, **J. Kang**, J. Kim, S. Lee, H. Youn, B. J. Ham, and H. G. Jeong. “Cerebral amyloid accumulation is associated with distinct structural and functional alterations in the brain of depressed elders with mild cognitive impairment”. In: *Journal of Affective Disorders* 281 (2021), pp. 459–466.
- [17] **J. Kang**, D. Derva, D. Y. Kwon, and C. Wallraven. “Voluntary and spontaneous facial mimicry towards others’ emotional expression in patients with Parkinson’s disease”. In: *PLOS ONE* 14.4 (2019), e0214957.
- [18] Y. E. Park, H. K. Yoon, S. Y. Kim, J. Williamson, C. Wallraven, and **J. Kang**. “A preliminary study for translation and validation of the Korean version of the Cognitive, Affective, and Somatic Empathy Scale in young adults”. In: *Psychiatry Investigation* 16.9 (2019), pp. 671–678.
- [19] **J. Kang**, B. J. Ham, and C. Wallraven. “Cannot avert the eyes: Reduced attentional blink towards others’ emotional expressions in empathic people”. In: *Psychonomic Bulletin & Review* 24.3 (2017), pp. 810–820.
- [20] E. Won, **J. Kang**, A. Kim, S. Choi, K. M. Han, W. S. Tae, and M. S. Lee. “Influence of BclI C/G (rs41423247) on hippocampal shape and white matter integrity of the parahippocampal cingulum in major depressive disorder”. In: *Psychoneuroendocrinology* 72 (2016), pp. 147–155.

Co-Authored Publications

- [1] D.-H. Cha, S.-H. Chi, W. Lee, **J. C. Kang**, J.-A. Gim, J.-K. Ko, and M. Lee. “Neuroimmune links to white-matter microstructure in medication-naïve children with tic disorder: a mediation analysis”. In: *Clinical Psychopharmacology and Neuroscience* (2026).
- [2] Minjee Jung, Jihoon Park, Youbin Kang, Daun Shin, **June Kang**, JeYoung Jung, Marcus Kaiser, Dorothee P Auer, Byung-Joo Ham, and Kyu-Man Han. “Resting-state functional connectome correlates of suicide attempt history and childhood trauma in major depressive disorder”. In: *Journal of Affective Disorders* (2026), p. 122111.
- [3] Minjee Jung, Jihoon Park, Youbin Kang, Daun Shin, **June Kang**, Woo-Suk Tae, Byung-Joo Ham, and Kyu-Man Han. “Suicide attempt-related gray matter volume alterations in major depressive disorder and its associations with childhood trauma”. In: *Psychiatry Research* (2026), p. 117273.
- [4] G. Shin, A. T. Siddiquee, M.-H. Lee, Y. Hwang, **J. C. Kang**, S. K. Lee, Y. Kim, B. Kim, C. Shin, and N. Kim. “Middle-Aged Carotid Plaque and Cognitive Functions in Later Life: A Population-Based Study”. In: *Neurology Open Access* 2.2 (2026), e000087.
- [5] S. Chi, J. K. Ko, **J. Kang**, J. A. Gim, and M. S. Lee. “Longitudinal analysis of cytokine profiles and their impact on tic disorder severity over one year”. In: *Clinical Psychopharmacology and Neuroscience* (2025), pp. 1–7.
- [6] S. Chi, Y. E. Mok, **J. Kang**, J. A. Gim, and M. S. Lee. “Network hub changes in the pars opercularis indicate impaired inhibition in tic disorder patients”. In: *Acta Neuropsychiatrica* 37 (2025), e6.

- [7] H. Lee, N. Lee, Y. Lim, **J. C. Kang**, J. A. Gim, and M. S. Lee. “Changes in heart rate variability in adolescent patients with tic disorders: A 1-year prospective study”. In: *Psychiatry Investigation* 22.7 (2025), pp. 766–774.
- [8] Y. E. Mok, S. Chi, **J. Kang**, J. A. Gim, J. K. Ko, and M. S. Lee. “The usefulness of heart rate variability in adolescents with tic disorder: Focused on interplay with quality of life”. In: *PLOS ONE* 20.4 (2025), e0321369.
- [9] A. T. Siddiquee, Y. H. Hwang, S. Kim, S. J. Shin, J. S. Lee, **J. C. Kang**, and C. Shin. “Middle-age cerebral small vessel disease and cognitive function in later life: A population-based prospective cohort study”. In: *The Lancet Regional Health – Western Pacific* 55 (2025).
- [10] Y. K. Ko, S. Chi, G. H. Nam, K. W. Baek, K. Ahn, Y. Ahn, **J. C. Kang**, M. S. Lee, and J. A. Gim. “Epigenome-wide association study for tic disorders in children: A preliminary investigation in Korean population”. In: *Clinical Psychopharmacology and Neuroscience* 22.2 (2024), p. 295.
- [11] S. Chi, Y. E. Mok, **J. Kang**, J. A. Gim, C. Han, and M. S. Lee. “Cytokine levels reflect tic symptoms more prominently during mild phases”. In: *BMC Neuroscience* 24.1 (2023), p. 57.
- [12] H. Roh, **J. Kang**, S. Y. Hwang, S. B. Koh, and J. H. Kim. “Regional cerebral cortical atrophy is related to urinary tract symptoms in Parkinson’s disease”. In: *Journal of Neuroimaging* 31.2 (2021), pp. 363–371.
- [13] H. Roh, **J. Kang**, S. B. Koh, and J. H. Kim. “Hippocampal volume is related to olfactory impairment in Parkinson’s disease”. In: *Journal of Neuroimaging* 31.6 (2021), pp. 1176–1183.
- [14] K. M. Han, M. R. Han, A. Kim, W. Kang, Y. Kang, **J. Kang**, and B. J. Ham. “A study combining whole-exome sequencing and structural neuroimaging analysis for major depressive disorder”. In: *Journal of Affective Disorders* 262 (2020), pp. 31–39.
- [15] K. M. Han, W. S. Tae, A. Kim, Y. Kang, W. Kang, **J. Kang**, and B. J. Ham. “Serum FAM19A5 levels: A novel biomarker for neuroinflammation and neurodegeneration in major depressive disorder”. In: *Brain, Behavior, and Immunity* 87 (2020), pp. 852–859.
- [16] W. Kang, J. H. Shin, K. M. Han, A. Kim, Y. Kang, **J. Kang**, and B. J. Ham. “Local shape volume alterations in subcortical structures of suicide attempters with major depressive disorder”. In: *Human Brain Mapping* 41.17 (2020), pp. 4925–4934.
- [17] J. Lee, C. Han, Y. H. Ko, **J. Kang**, Y. Byun, Y. Son, and H. K. Yoon. “Emotional changes and protective factors of emotional workers in the public and private sectors”. In: *Psychiatry Investigation* 17.7 (2020), pp. 645–653.
- [18] D. Derya, **J. Kang**, D. Y. Kwon, and C. Wallraven. “Facial expression processing is not affected by Parkinson’s disease, but by age-related factors”. In: *Frontiers in Psychology* 10 (2019), p. 2458.
- [19] K. M. Han, A. Kim, W. Kang, Y. Kang, **J. Kang**, E. Won, and B. J. Ham. “Hippocampal subfield volumes in major depressive disorder and bipolar disorder”. In: *European Psychiatry* 57 (2019), pp. 70–77.
- [20] M. R. Han, K. M. Han, A. Kim, W. Kang, Y. Kang, **J. Kang**, and B. J. Ham. “Whole-exome sequencing identifies variants associated with structural MRI markers in patients with bipolar disorders”. In: *Journal of Affective Disorders* 249 (2019), pp. 159–168.
- [21] U. Ju, **J. Kang**, and C. Wallraven. “To brake or not to brake? Personality traits predict decision-making in an accident situation”. In: *Frontiers in Psychology* 10 (2019), p. 134.
- [22] U. Ju, **J. Kang**, and C. Wallraven. “You or me? Personality traits predict sacrificial decisions in an accident situation”. In: *IEEE Transactions on Visualization and Computer Graphics* 25.5 (2019), pp. 1898–1907.
- [23] K. M. Han, S. Choi, A. Kim, **J. Kang**, E. Won, W. S. Tae, Y. K. Kim, M. S. Lee, and B. J. Ham. “The effects of 5-HTTLPR and BDNF Val66Met polymorphisms on neurostructural

- changes in major depressive disorder". In: *Psychiatry Research: Neuroimaging* 273 (2018), pp. 25–34.
- [24] K. S. Na, E. Won, **J. Kang**, A. Kim, S. Choi, Y. K. Kim, M. S. Lee, and B. J. Ham. "Interaction effects of oxytocin receptor gene polymorphism and depression on hippocampal volume". In: *Psychiatry Research: Neuroimaging* 282 (2018), pp. 18–23.
 - [25] K. S. Na, E. Won, **J. Kang**, A. Kim, S. Choi, W. S. Tae, and B. J. Ham. "Differential effect of COMT gene methylation on the prefrontal connectivity in subjects with depression versus healthy subjects". In: *Neuropharmacology* 137 (2018), pp. 59–70.
 - [26] K. M. Han, D. Kim, Y. Sim, **J. Kang**, A. Kim, E. Won, and B. J. Ham. "Alterations in the brainstem volume of patients with major depressive disorder and their relationship with antidepressant treatment". In: *Journal of Affective Disorders* 208 (2017), pp. 68–75.
 - [27] K. M. Han, E. Won, **J. Kang**, S. Choi, A. Kim, M. S. Lee, and B. J. Ham. "TESC gene-regulating genetic variant (rs7294919) affects hippocampal subfield volumes and parahippocampal cingulum white matter integrity in major depressive disorder". In: *Journal of Psychiatric Research* 93 (2017), pp. 20–29.
 - [28] K. M. Han, E. Won, **J. Kang**, A. Kim, H. K. Yoon, H. S. Chang, and B. J. Ham. "Local gyrification index in patients with major depressive disorder and its association with tryptophan hydroxylase-2 (TPH2) polymorphism". In: *Human Brain Mapping* 38.3 (2017), pp. 1299–1310.
 - [29] K. M. Han, E. Won, Y. Sim, **J. Kang**, C. Han, Y. K. Kim, and B. J. Ham. "Influence of FKBP5 polymorphism and DNA methylation on structural changes of the brain in major depressive disorder". In: *Scientific Reports* 7.1 (2017), pp. 1–12.
 - [30] J. Lee, S. Choi, **J. Kang**, E. Won, W. S. Tae, M. S. Lee, and B. J. Ham. "Structural characteristics of the brain reward circuit regions in patients with bipolar I disorder: A voxel-based morphometric study". In: *Psychiatry Research: Neuroimaging* 269 (2017), pp. 82–89.
 - [31] E. Won, K. M. Han, **J. Kang**, A. Kim, H. K. Yoon, H. S. Chang, and B. J. Ham. "Vesicular monoamine transporter 1 gene polymorphism and white matter integrity in major depressive disorder". In: *Progress in Neuro-Psychopharmacology and Biological Psychiatry* 77 (2017), pp. 138–145.
 - [32] E. Won, **J. Kang**, S. Choi, A. Kim, K. M. Han, H. K. Yoon, S. H. Cho, W. S. Tae, M. S. Lee, S. H. Joe, Y. K. Kim, and B. J. Ham. "The association between substance P and white matter integrity in medication-naïve patients with major depressive disorder". In: *Scientific Reports* 7.1 (2017), p. 9707.
 - [33] H. J. Chang, **J. Kang**, B. J. Ham, and Y. M. Lee. "A functional neuroimaging study of the clinical reasoning of medical students". In: *Advances in Health Sciences Education* (2016), pp. 1–14.
 - [34] S. Choi, K. M. Han, **J. Kang**, E. Won, H. S. Chang, W. S. Tae, and B. J. Ham. "Effects of a polymorphism of the neuronal amino acid transporter SLC6A15 gene on structural integrity of white matter tracts in major depressive disorder". In: *PLOS ONE* 11.10 (2016), e0164301.
 - [35] S. G. Kang, H. K. Yoon, C. H. Cho, S. Kwon, **J. Kang**, and H. J. Lee. "Decrease in fMRI brain activation during working memory performed after sleeping under 10 lux light". In: *Scientific Reports* 6 (2016), p. 36731.
 - [36] D. Kwon, B. Ham, **J. Kang**, and H. Yoon. "Frontoparietal cortical thinning in respiratory-type panic disorder: A preliminary report". In: *Psychiatric Investigation* 13.1 (2016), pp. 146–151.
 - [37] K. S. Na, E. Won, **J. Kang**, H. S. Chang, H. K. Yoon, W. S. Tae, and B. J. Ham. "Brain-derived neurotrophic factor promoter methylation and cortical thickness in recurrent major depressive disorder". In: *Scientific Reports* 6.1 (2016), pp. 1–10.
 - [38] E. Won, S. Choi, **J. Kang**, A. Kim, K. M. Han, H. S. Chang, and B. J. Ham. "Association between reduced white matter integrity in the corpus callosum and serotonin transporter

- gene DNA methylation in medication-naïve patients with major depressive disorder”. In: *Translational Psychiatry* 6.8 (2016), e866.
- [39] E. Won, S. Choi, **J. Kang**, M. S. Lee, and B. J. Ham. “Regional cortical thinning of the orbitofrontal cortex in medication-naïve female patients with major depressive disorder is not associated with MAOA-uVNTR polymorphism”. In: *Annals of General Psychiatry* 15.1 (2016), pp. 1–8.
 - [40] J. Jung, **J. Kang**, E. Won, K. Nam, M. S. Lee, W. S. Tae, and B. J. Ham. “Impact of lingual gyrus volume on antidepressant response and neurocognitive functions in major depressive disorder: A voxel-based morphometry study”. In: *Journal of Affective Disorders* 169 (2014), pp. 179–187.
 - [41] S. G. Ko, **J. Kang**, and Y. G. Ko. “Does depressed person perceive time as passing slowly?” In: *Korean Journal of Social and Personality Psychology* 169 (2012), pp. 179–187.

Conference Proceedings

- [1] J. Park, C. Wallraven, and **J. Kang**. “Too Close for Comfort: Continuous Anxiety Decoding from Physiology and Embodied Signals in Social VR”. In: *Proceedings of the IEEE International Symposium on Mixed and Augmented Reality (ISMAR 2026)*. Accepted. 2026.
- [2] H. S. Ryu, **J. C. Kang**, and C. Wallraven. “Test-Time User Alignment via Bayesian Population Guidance in Subjective Tasks”. In: *Proceedings of the 35th International Joint Conference on Artificial Intelligence (IJCAI-ECAI 2026)*. Accepted (Special Track on Human-Centred AI). Bremen, Germany, 2026.
- [3] **J. Kang** and Y. E. Park. “A preliminary study on reading the mind in the eyes of the robot”. In: *2021 30th IEEE International Conference on Robot & Human Interactive Communication (RO-MAN)*. IEEE, 2021, pp. 839–843.

Oral Presentations

- [1] **J. C. Kang**, J.-A. Kim, and M. S. Lee. “Multimodal Connectome Fusion for Predicting Treatment Outcome in Tic Disorders: A Machine Learning Approach”. In: *12th Congress of the Asian Society for Child and Adolescent Psychiatry and Allied Professions (ASCAPAP 2026)*. Oral presentation. Seoul, Korea, 2026.

Poster Presentations

- [1] **J. Kang**. “Does perception of artificial agents as outgroup members affect recognition tasks? Case analysis of robot RMET”. In: *Society for Social Neuroscience Annual Conference*. 2025.
- [2] **J. Kang**. “The effect of transcutaneous vagal nerve stimulation on empathic choice towards negative emotion in others”. In: *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*. Vol. 18. 1. 2025, p. 393.
- [3] **J. Kang**. “The brain structural differences related to grandparenting in healthy seniors: An interaction analysis with biological sex”. In: *Society for Social Neuroscience Annual Conference*. 2024.
- [4] **J. Kang**, Y. Park, H. Lim, and C. Wallraven. “Modulating emotional empathy using individualised transcranial alternating current stimulation protocol”. In: *Brain Stimulation: Basic, Translational, and Clinical Research in Neuromodulation*. Vol. 12. 2. 2019, p. 399.
- [5] D. Derya, D. Y. Kwon, **J. Kang**, and C. Wallraven. “Let’s face it: Which factor impacts communicative and emotional facial expressions? Parkinson’s disease or age”. In: *21st Annual Meeting of the Korean Society for Brain and Neural Science*. 2018.
- [6] **J. Kang**, B. Ham, J. W. Kang, W. Y. Kang, A. Kim, and G. J. Shim. “Functional characteristics of brain reward circuitry in the altruistic and self-oriented reward processing”. In: *2018 American Psychiatric Association Annual Meeting*. 2018.

- [7] H. Lim, Y. Park, C. Wallraven, and **J. Kang**. “Investigation of important facial regions for emotion recognition using composite faces”. In: *Proceedings of the Spring Conference of the Korean Society for Emotion and Sensibility*. 2018, pp. 79–80.
- [8] H. Lim, E. Won, Y. E. Park, and **J. Kang**. “Current genetic understanding of individual variance in emotional intelligence”. In: *21st Annual Meeting of the Korean Society for Brain and Neural Science*. 2018.
- [9] Y. E. Park, **J. Kang**, H. Lim, and C. Wallraven. “Smile, the world smiles towards you or your smile? The effect of emotions and facial identity on working memory processes”. In: *21st Annual Meeting of the Korean Society for Brain and Neural Science*. 2018.
- [10] Y. E. Park, H. Lim, **J. Kang**, and C. Wallraven. “Influence of emotional information in working memory tasks”. In: *Proceedings of the Spring Conference of the Korean Society for Emotion and Sensibility*. 2018, pp. 83–84.
- [11] **J. Kang** and B. Ham. “Empathic readiness: Resting-state functional connectivity reflects individual differences in trait empathy”. In: *British Association for Cognitive Neuroscience Annual Conference*. 2016.
- [12] **J. Kang** and B. Ham. “Development and validation of East-Asian dynamic facial expression stimulus”. In: *Current Trends in Biomedical Science*. 2015.
- [13] **J. Kang**, J. Jung, and B. Ham. “Trait empathy and facial mimicry towards goal-irrelevant presentation of others’ emotional expressions”. In: *Society for Social Neuroscience Annual Conference*. 2015.
- [14] **J. Kang**, A. Shin, and C. Wallraven. “Cross-validation of East-Asian dynamic facial expression stimulus using automatic Facial Action Coding System”. In: *Current Trends in Biomedical Science*. 2015.
- [15] **J. Kang**, E. Won, and B. Ham. “Validation of Korean version of questionnaire of affective and cognitive empathy”. In: *Current Trends in Biomedical Science*. 2015.

Patents and Intellectual Property

- [1] **Intelligent Healthcare Device and System for Emotional Care**. Patent application, Republic of Korea (10-2024-0033801). Status: Pending.
- [2] **Social Anxiety Treatment System through Biofeedback and Exposure Therapy Based on Video Conference**. Patent registered, Republic of Korea (10-2499966). Patent applications pending in the United States and European Union.

Honours and Awards

- **Bronze Award**, 2nd Korean Emotion Recognition Competition, Korean Smart Media Society and Chonnam National University (2025)
- **Best Paper Presentation Award**, 2018 Spring Conference of the Korean Society for Emotion and Sensibility. Paper: *Influence of Emotional Information in Working Memory Tasks*
- **Best Paper Presentation Award**, 2018 Spring Conference of the Korean Society for Emotion and Sensibility. Paper: *Research on Important Facial Regions for Emotion Recognition Using Composite Faces*
- **NVIDIA GPU Grant** (2018)

Research Grants and Funding

2026–Present | Principal Investigator

Development of Socially Intelligent Edge Language Models and Neural Data Refinement via GPU Parallel Computing

National IT Industry Promotion Agency (PJT-25-122281)

Funding: In-kind computational resource support (£79,400 equivalent) (135,011,520 KRW)

2025–Present | Principal Investigator

Development of empathic artificial intelligence model using artificial mirror neuron network based on reservoir computing

National Research Foundation of Korea (RS-2025-23524143)

Funding: £148,000 (279,567,000 KRW)

2023–Present | Principal Investigator

Decision to care: The neuroplasticity of the brain and autonomic nervous system associated with care experience

National Research Foundation of Korea (RS-2023-00272647)

Funding: £142,400 (235,216,000 KRW)

2021–2023 | Principal Investigator

Translational approach on prognosis of tic disorder using neuroimaging and electroencephalography technologies

Korea Health Industry Development Institute (HI21C0012020021)

Funding: £176,055 (275,000,000 KRW)

2018–2023 | Principal Investigator

Multi-level approach to the automaticity of empathy: Individual variance and expandability of empathic ability

National Research Foundation of Korea (NRF-2018R1D1A1B07048820)

Funding: £170,450 (250,000,000 KRW)

2018–2019 | Principal Investigator

Measuring empathy bias towards outgroup members and reducing bias through non-invasive brain stimulation techniques in the context of multicultural society and minority hatred

National Research Foundation of Korea (NRF-2018R1E1A2A02086661)

Funding: £54,400 (80,000,000 KRW)

2017–2018 | Principal Investigator

Decoding individual pattern of emotional empathy and elicitation using high-density electroencephalography and non-invasive brain stimulation technique

National Research Foundation of Korea (NRF-2017R1E1A2A01079266)

Funding: £55,200 (85,000,000 KRW)

Professional Service

Committee Membership

Committee of Inclusion, 30th IEEE International Conference on Robot and Human Interactive Communication, 2021, Canada

Technical Training

Behaviour experiment design without coding using SuperLab. Delivered at 2018 Autumn Conference of the Korean Clinical Psychology Association.

Teaching and Academic Leadership

University-Level Coursework Delivered

- Neuroimaging (SOI4004), Department of Data Science, Hanyang University (March 2025 – June 2025)
- Neuroimaging (SOI4004), Department of Data Science, Hanyang University (March 2024 – June 2024)

- Social and Affective Neuroscience (PSY4130), Department of Psychology, Yonsei University (September 2022 – December 2022)
- Introduction to Cognitive Neuroscience (PSY3146), Department of Psychology, Yonsei University (March 2022 – June 2022)
- Social Brain and Human Behaviour (PMED230), College of Medicine, Korea University (September 2021 – December 2021)
- Social Brain and Human Behaviour (PMED230), College of Medicine, Korea University (September 2020 – December 2020)
- Introduction to White Matter Analysis (BMS536), Department of Biomedical Science, Korea University (September 2018 – December 2018)
- Introduction to Neuroimaging Research (BMS691), Department of Biomedical Science, Korea University (March 2017 – August 2017)
- Structural Neuroimaging Analysis for Mental Disorder Research (BMS712), Department of Biomedical Science, Korea University (September 2016 – December 2016)

Open Access Lecture Series

- Neuroscience of Empathy. K-MOOC (Korean Massive Open Online Courses) (2024)
- The Automaticity of Empathy. Friday Science Touch, Session 24. Jeongdok Public Library, October 2019

Professional Qualifications and Certifications

National Certifications (Republic of Korea)

- Big-Data Analysis Engineer (National Certification #: BAE-010002165)
- Survey Analyst, Junior (National Certification #: 15202073653M)
- Clinical Psychology Practitioner (National Certification #: 17201073924L)

Technical Competencies

Neuroimaging and Neurophysiology

- Structural and functional MRI analysis
- EEG and high-density EEG
- Diffusion tensor imaging and white matter tract analysis
- Non-invasive brain stimulation methodologies
- CAT12 and standard template registration protocols

Psychophysiological Assessment

- Heart rate variability analysis
- Autonomic nervous system evaluation
- Electrodermal activity measurement
- Photoplethysmography-based assessment
- Facial action coding and automated emotion detection

Statistical and Computational Methods

- Longitudinal data analysis and mixed-effects modelling
- Structural equation modelling and causal inference
- Machine learning applications in neuroscience
- Big data analysis and multivariate statistics

Software Proficiency

- MATLAB, Python, R
- Statistical packages (SPSS, Stata)
- Neuroimaging software (SPM12, AFNI, FSL)
- Psychophysiology analysis tools (AcqKnowledge, Biograph)

Languages

- **English:** Professional working proficiency
- **Korean:** Native proficiency