

Ph.D. Youngjai Park

Last update: Feb 06, 2025.

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Professional Careers

Senior Researcher

Feb 2025 – present.

Center for R&D Investment and Strategy Research, Division of Data Analysis,
Korea Institute of Science and Technology Information (KISTI)

Postdoctoral Researcher

Mar 2023 – Dec 2024.

Center for Neuroscience Imaging Research (CNIR), Republic of Korea

Postdoctoral Researcher

Mar 2021 – Feb 2023.

Statistical Physics of Ecology and Evolution Dynamics (SPEED) Group,
Department of Physics, Inha University, Republic of Korea
Asia Pacific Center for Theoretical Physics (APCTP), Republic of Korea

Visiting Researcher

Sep 2020 – Feb 2021.

Statistical Physics of Ecology and Evolution Group,
Asia Pacific Center for Theoretical Physics (APCTP), Republic of Korea

Visiting Researcher

Aug 2018 – Jan 2019.

Complexity Science Group, Department of Physics and Astronomy, University of Calgary, Canada

Educations

Ph.D. in Applied Physics

Mar 2016 – Feb 2021.

Department of Applied Physics, Hanyang University, Republic of Korea
Thesis: Network stylometry in complex systems: focused on the motif structures
Thesis Advisor: Prof. Seung-Woo Son

B.Sc. in Applied Physics

Mar 2010 – Feb 2016.

Department of Applied Physics, Hanyang University, Republic of Korea

Grants

NRF, Postdoctoral Research Program

Sep 2023 – Feb 2024.

Title: Study on transition dynamics of relative phase to investigate conscious/unconscious states in human brain

Center for Neuroscience Imaging Research, N Center, Republic of Korea

NRF - GRA program in Canada

Aug 2018 – Jan 2019.

Title: Motif dynamics on a growing network model for various open evolving systems

Department of Physics and Astronomy, University of Calgary, Canada

Hanyang University combined MS/Ph.D. grant

Mar 2016 – Feb 2019.

Department of Applied Physics, Hanyang University, Republic of Korea

Organizing Experiences

- **Modeling on Ecology and Evolution Workshop**, Seoul, Republic of Korea (Oct 27th – 29th, 2022). ([link](#))
 - **Workshop about social science and physics**, Deagu, Republic of Korea (Nov 29th – 30th, 2021).
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Relevant Activities

Research & Teaching Assistant

- KENTECH (Korea Institute of Energy Technology), Republic of Korea Aug 2022 – Dec 2022.
 - General Physics
- Department of Applied Physics, Hanyang University, Republic of Korea Mar 2016 – Aug 2018.
 - General Physics Lab. 1
 - Computational Physics & Applications of Computational Physics
 - Scientific Analysis and Presentation

Relevant activity

Apr 2014 – Aug 2015.

- UST research internships, Korea Electrotechnology Research Institute (KERI) & University of Science and Technology (UST), Republic of Korea (Aug 2015); KOSAF Working scholarship in KERI (Apr 2014).

Korean military service

Mar 2011 – Dec 2012.

Trainings

- 2017 NIMS Study Group with Industry, National Institute for Mathematical Sciences (NIMS) & Innovation Center for Industrial Mathematics (ICIM), Republic of Korea (Dec, 2017).
 - 16th APCTP Science Communication School, Asia Pacific Center for Theoretical Physics (APCTP), Republic of Korea (Feb 2017).
 - 2016 Summer Special Lecture, Korea Academy of Complexity Studies (KACS), Republic of Korea (Aug 2016).
 - 2016 NIMS-SKKU MDA-TDA Summer School, National Institute for Mathematical Sciences (NIMS), Republic of Korea (Jun 2016).
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Awards

- **Excellent Poster Award**, 2023 IBS CNIR workshop, Republic of Korea (Dec 2023).
 - **Best award**, 2017 KACS autumn conference, Republic of Korea (Nov 2017).
 - **Best award**, The 8th KIAS CAC Summer School, Republic of Korea (Jul 2017).
 - **Excellent Presentation Award**, 16th APCTP Science Communication School, Republic of Korea (Feb 2017).
 - **Encouragement Prize**, Best Paper Competition commemorating the 2016 International Council on Archives Congress Presidential Archives, Republic of Korea (Dec 2016).
 - **Best Poster Presentation**, 2016 KPS spring conference, Republic of Korea (Apr 2016).
 - **Excellence Award**, 2015 Applied Science Capstone Design Competition, Republic of Korea (Nov 2015).
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Publications

7. **Youngjai Park**, Younghwa Cha, Hyoungkyu Kim, Yukyung Kim, Jae Hyung Woo, Hanbyul Cho, Ting Xu, Seok-Jun Hong, George Mashour, Uncheol Lee, Christopher Honey, and Joon-Young Moon, “Sub-second Fluctuation between Top-Down and Bottom-Up Modes Distinguishes Diverse Human Brain States”, (*in preparation*).
6. Yeji Lee, Sujung Park, Hyoungkyu Kim, Jeongmin Kim, Eun Jung Kim, **Youngjai Park**, Uncheol Lee, Jeongwook Kwon, Joon-Young Moon, and Bon-Nyeo Koo, “EEG Correlates of Delayed Emergence after Remimazolam-Induced Anaesthesia Compared to Propofol”, *medRxiv*, 2024.05.17.24307522 (2024). [\(link\)](#)
5. **Youngjai Park**, Takashi Shimada, Seung-Woo Son, and Hye Jin Park, “Invasion and Interaction Determine Population Composition in an Open Evolving Ecological System”, *Chaos: An Interdisciplinary Journal of Nonlinear Science* **33**, 063151 (2023). [\(link\)](#)
4. **Youngjai Park**, Mi Jin Lee, and Seung-Woo Son, “Motif Dynamics in Signed Directional Complex Networks”, *Journal of the Korean Physical Society* **78**, 535 (2021). [\(link\)](#)
3. Young Jin Kim, Sohee Lim, **Young-Jai Park**, and Seung-Woo Son, “Quantitative Analysis of K-Pop Writers’ Network by Using K-Pop Lyrics”, *New Physics: Sae Mulli* **68**, 700 (2018). [\(link\)](#)
2. **Young-Jai Park**, Dong Woo Kim, Seon Ho Nam, Young Jin Kim, and Seung-Woo Son, “Korean Football Stylometry by Using the Football Events Networks”, *New Physics: Sae Mulli* **68**, 642 (2018). [\(link\)](#)
1. **Young-Jai Park**, Young-Bin Kim, Seon-Young Jeong, Young Jin Kim, and Seung-Woo Son, “Network Analysis in Korean Presidential Speeches by Using Word2Vec”, *New Physics: Sae Mulli* **67**, 569 (2017). [\(link\)](#)

Presentations

- **Relationship between BOLD activity and cortico-cortical communications in simultaneous fMRI-EEG recordings of human brain**, 2024 IBS CNIR workshop, Suwon, Republic of Korea (Dec 2024); 2024 KPS fall conference, Yeosu, Republic of Korea (Oct 2024); KSBNS 2024, Gyeongju, Republic of Korea (Oct 2024).
 - **Understanding synchronization considering both the amplitude and phase of oscillators by utilizing the Stuart-Landau model**, 2024 KPS spring conference, Daejeon, Republic of Korea (Apr 2024).
 - **How to Detect the Depth of Anesthesia in Human Brain Waves Utilizing Relative Phase Dynamics**, OHBM2024, Seoul, Republic of Korea (Jun 2024); KSCBP 2024, Seoul, Republic of Korea (Feb 2024); The 4th Symposium on Biological Physics, Busan, Republic of Korea (Jan 2024); 2023 IBS CNIR workshop, Suwon, Republic of Korea (Dec 2023); 2023 KPS fall conference, Changwon, Republic of Korea (Oct 2023); KSBNS 2023, Busan, Republic of Korea (Sept 2023); ICBP 2023, Seoul, Republic of Korea (Aug 2023).
 - **What determines a shape of biomass pyramids**, MEEW 2022, Seoul, Republic of Korea (Oct 2022); 2022 KPS fall conference, Busan, Republic of Korea (Oct 2022); RHINO 2022, Tokyo, Japan (Sept 2022).
 - **Invasion and Interaction determine Population Composition in an Open Evolving System**, Frontiers in Theoretical Biophysics, Gyeongju, Republic of Korea (Nov 2021); The 21st Statistical Physics Workshop, Online, Republic of Korea (Aug 2021).
 - **Diversity and Stability on an Open Evolving Network Model**, 2020 KPS fall conference, Online, Republic of Korea (Nov 2020); 2020 MEE workshop, Online, Republic of Korea (Aug 2020).
 - **Evolving open system with Lotka-Volterra dynamics**, RHINO 2020, Online, Republic of Korea (Aug 2020); 2020 KPS spring conference, Online, Republic of Korea (Jul 2020).
 - **Motif Dynamics on Signed Directed Complex Networks**, 2019 KPS fall conference, Gwangju, Republic of Korea (Oct, 2019); The 20th Workshop for Statistical Physics, Byeonsan, Republic of Korea (Aug 2019); 2019 KPS spring conference, Daejeon, Republic of Korea (Apr 2019); Dynamics Days 2019, Evanston, United States (Jan 2019).
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- **Football Stylometry with Football Event Network Analysis**, 2017 KACS autumn conference, Seoul, Republic of Korea (Nov 2017); Korean society of Science & Football, Seoul, Republic of Korea (Jun 2017).
 - **Motifs dynamics on a network model of evolving open system**, 2017 KPS fall conference, Gyeongju, Republic of Korea (Oct 2017); The 2nd Workshop on Self-Organization and Robustness of Evolving Many-Body Systems, Sapporo, Japan (Sept 2017).
 - **Microscopic network structures on a model of evolving open system**, The 19th Workshop for Statistical Physics, Mungyeong, Republic of Korea (Aug 2017).
 - **Growth conditions on a model of evolving open system**, 2017 KPS spring conference, Daejeon, Republic of Korea (Apr 2017).
 - **Network analysis in various systems**, Mini-Workshop on Social Modeling and Simulation and Hands-on Tutorial of OACIS, Kobe, Japan (Mar 2017).
 - **Network analysis in Korean presidential speeches by using Word2Vec**, 2016 KACS autumn conference, Seoul, Republic of Korea (Nov 2016); NSPCS16, Hoegi, Republic of Korea (Jul 2016).
 - **Chronological Changes in the Spoken Word Networks of Korean Presidents**, NetSci2016, Seoul, Republic of Korea (May 2016); 2016 KPS spring conference, Daejeon, Republic of Korea (Apr 2016).
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