




JUNGMIN KIM, PH.D.

Research Associate
Department of Electrical and Computer Engineering
University of Wisconsin–Madison, Madison, WI 53706, USA

+1 (608) 377-5049
✉ jmkim93@gmail.com
  

PERSONAL INFO	South Korean citizen, J-1 Research Scholar in the United States, Born in 1993	
EDUCATION	Ph.D. in Electrical and Computer Engineering Seoul National University Advisor: Prof. Namkyoo Park & Prof. Sunkyu Yu	Feb 2023 Seoul, South Korea
	B.S. in Electrical and Computer Engineering Seoul National University	Feb 2017 Seoul, South Korea
PROFESSIONAL EXPERIENCES	University of Wisconsin-Madison <i>Research Associate</i> Conducted research on various topics of optical computing: visual perception application, hardware design, and 3D face recognition with neuromorphic metasurfaces.	Madison, WI, United States Apr 2023 – Present
	Seoul National University <i>Research Assistant</i> Conducted research on band engineering in photonic ordered and disordered systems. Photonic Systems Laboratory & Intelligent Wave Systems Laboratory	Seoul, South Korea Mar 2017 – Feb 2023
	<i>Teaching Assistant</i> ECE202B: Introduction to Electromagnetism (Fall 2018, 2019, 2020); ECE326: Applied Quantum Mechanics (Spring 2018, 2019); ECE832A: Nanophotonics (Spring 2018)	Mar 2017 – Feb 2023
RESEARCH INTERESTS	Main field: Photonics Present focus: Optical computing theory and simulation	
PUBLICATIONS	Preprints <ul style="list-style-type: none">Dissertation: J. Kim, “<i>Manipulating Spatiotemporal Degrees of Freedom for Photonic Switching Devices: Theoretical and Machine-Learning Approaches</i>,” Seoul National University (Feb 2023). [pdf]J. Kim,^{†,*} Q. Zhou,^{†,*} and Z. Yu, Photonic systolic array for all-optical matrix-matrix multiplication, arXiv:2410.21671 (2024).	
	Peer-Reviewed Articles <ul style="list-style-type: none">[8] J. Kim,[*] N. Yu, and Z. Yu, Compute-First Optical Detection for Noise-Resilient Visual Perception, ACS Photonics (2025). [arXiv][7] J. Kim,[†] J.-Y. Kim,[†] J. Kim, Y. Hyeong, B. Neseli, J.-B. You, J. Shim, J. Shin, H.-H. Park, and H. Kurt,[*] Inverse design of nanophotonic devices enabled by optimization algorithms and deep learning: recent achievements and future prospects, Nanophotonics (2025).[6] J. Kim, D. Lee, S. Yu,[*] and N. Park,[*] Unidirectional scattering with spatial homogeneity using correlated photonic time disorder, Nature Physics 19, 726 (2023).[5] S. Oh, J. Kim, X. Piao, S. Kim, K. Kim, S. Yu, and N. Park,[*] Control of localization and optical properties with deep-subwavelength engineered disorder, Optics Express 30, 28301 (2022).	

- [4] S. Choi,[†] J. Kim,[†] J. Kwak, N. Park,* and S. Yu,* Topologically Protected All-Optical Memory, [Advanced Electronic Materials 8, 2200579 \(2022\)](#). [cover]
- [3] J. Kim, S. Park, S. Yu,* and N. Park,* Machine-Engineered Active Disorder for Digital Photonics, [Advanced Optical Materials 10, 2102642 \(2022\)](#). [cover]
- [2] S. Park,[†] I. Lee,[†] J. Kim, N. Park,* and S. Yu,* Hearing the shape of a drum for light: isospectrality in photonics, [Nanophotonics 11, 2763 \(2022\)](#).
- [1] J. Kim, S. Yu,* and N. Park,* Universal Design Platform for an Extended Class of Photonic Dirac Cones, [Physical Review Applied 13, 044015 \(2020\)](#).

[†] Equal contribution; * Corresponding author(s)

PRESENTATIONS

Talks

- [2] J. Kim, Metalens design for noise resilience in machine visual perception, Seoul National University, Seoul, Korea (2024).
- [1] J. Kim, S. Yu, and N. Park, Neural-network-based design of tunable multilayer films, GoGE/SDG Session on Electro-Physics, e-TEC Talks@SNU Summer 2021, virtual (2021).

Conferences

- [11] J. Kim, N. Yu, and Z. Yu, Incoherent meta-imaging system for noise-robust object recognition, [CLEO-PacificRim 2024, Mo1A-4, Incheon, Korea \(2024\)](#).
- [10] D. Lee, J. Kim, H. Park, I. Lee, S. Yu, and N. Park, Design of Correlated Photonic Time Disorder for Unidirectional Scattering, [Advanced Photonics Congress 2023, NoTu3C.4, Busan, Korea \(2023\)](#).
- [9] D. Lee, J. Kim, N. Park, and S. Yu, Molecular Dynamics for Microscopic Analysis of Refractive Index in Amorphous Hafnium Oxides, [Frontiers in Optics 2022, FW5C.5, Rochester, NY, USA \(2022\)](#).
- [8] J. Kim, S. Park, Dayeong Lee, S. Yu, and N. Park, Data-Driven Engineering of Active Photonic Disorder, [Frontiers in Optics 2022, JW4A.20, Rochester, NY, USA \(2022\)](#).
- [7] J. Kim, S. Yu, and N. Park, Neural-network-based design of tunable multilayer films, [OSA Advanced Photonics Congress, JW4B.3, virtual \(2021\)](#).
- [6] J. Kim, S. Park, I. Lee, S. Yu, and N. Park, Design of Multilayer-based Active Photonic Devices using Artificial Neural Networks, Photonics Conference, F2B-II.02, Pyeongchang, Korea (2021)
- [5] J. Kim, S. Yu, and N. Park, Design of type-II photonic Dirac cone near Gamma point, A3 Metamaterials Forum, Sapporo, Japan (2019).
- [4] J. Kim, S. Yu, and N. Park, Classification of deformed photonic Dirac cones, META, Lisbon, Portugal (2019).
- [3] J. Kim, S. Yu, and N. Park, Inverse design of deformed photonic Dirac cone, OSK Winter meeting, Hoengseong, Korea (2019).
- [2] J. Kim, S. Yu, and N. Park, Crystal-like Momentum in a Designed Disordered Medium, OSK Winter meeting, Gwangju, Korea (2018).
- [1] J. Kim, S. In, and N. Park, Metasurface Back Reflectors for High-Efficiency Organic Solar Cells, OSK Summer meeting, Busan (2016).

PATENTS

- [1] Topologically-protected all-optical memory, KR #10-2624621 (Jan 2024).

HONORS & AWARDS	• Distinguished PhD Dissertation Award, ECE, SNU.	Feb 2023
	• Best Poster Award, OSK Winter Meeting.	Feb 2019
	• National Science & Engineering Undergraduate Scholarship funded by Korea Student Aid Foundation.	2014–2016
ACADEMIC SERVICES	<ul style="list-style-type: none"> • Reviewer of: Optics Express, Optics Letters, Photonics Research, Optica, Nature Communications, ACS Photonics 	
SKILLS & LANGUAGES	<ul style="list-style-type: none"> • Numerical tools and methods: Numpy, MATLAB (TMM, PWEM, Optimizations, etc.); COMSOL Multiphysics (FEM) • Deep learning framework: PyTorch • Languages: Korean (native), English (proficient) 	

Last update on February 6, 2025.