SEUNGMAN CHOI

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EDUCATION & WORKING

Purdue University **West Lafayette, IN**
PhD. in electrical and computational engineering department (GPA 3.94/4.00) **Apr 2022- Current**
Super-resolution imaging through turbulence for space situational awareness
Developed a computational imaging algorithm for extreme and information-starved imaging scenarios [1,2,5].

Korea Advanced Institute of Science and Technology (KAIST) **Daejeon, KR**
Research associate in Mechanical engineering department **Apr 2019- Aug 2022**
Optical tool development for semiconductor inspection
Achieved higher spatial resolution than existing EUV cameras by combining an EUV light-control architecture with computational imaging techniques [3,6,7,8].

Tokyo Institute of Technology (Ti-tech) **Tokyo, JP**
M.S & B.S in Mechanical Engineering (Magna Cum Laude) **Apr 2013- Mar 2019**
Scaled-up Microfluidic device using semiconductors manufacturing technique
Developed a microfluidic device for large-scaled droplet generation [4].
Advanced gripping system for semiconductors with complex shapes
Developed a damage-free electrostatic gripper for small and flexible wearable devices [9,10].

RELATED PUBLICATIONS LIST

†: Equally contributed to works.

[1] S. Choi, et al, "Poisson wavefront imaging in photon-starved scenarios", https://arxiv.org/abs/2512.12401, 2025.
[2] S. Choi, et al, "Photon-starved imaging through turbulence at the diffraction limit", https://arxiv.org/abs/2510.22806, 2025.
[3] S. Won, J. Kim, Y. Oh, T. Kim, S. Choi, at al, "Programmable structured DUV illumination by coherent harmonic generation at crystalline solids for nanometer-resolution inspection of periodic samples" *PhotoniX*, *6*(1), 1-15, 2025.
[4] N. Tottori, S. Choi, et al. "Production of monodisperse oil-in-water droplets and polymeric microspheres below 20 μm using a PDMS-based step emulsification device". *Micromachines*, *16*(2), 132, 2025.
[5] H. Choi†, S. Choi†, et al, "Telescope imaging beyond the Rayleigh limit in extremely low SNR", New Journal of Physics 26 (9), 093019, 2024.
[6] B. Kim†, S. Choi†, et al, "Coherent manipulation of extreme-ultraviolet Bessel vortex beam from solids by active wavefront shaping of driving fundamental beam" *ACS Photonics*, 10.1021/acsphotoncis.3c00645, 2023.
[7] S. Won†, S. Choi†, et al, "Dynamic ultraviolet harmonic beam pattern control by programmable spatial wavefront modulation of near-infrared fundamental beam" *Nanophotonics*, **12** 16, 2023.
[8] Y. Kim†, B. Kim†, S. Choi†, et al, "Compensation of laser propagation effects within solids for high harmonic generation of extreme ultraviolet radiation" *Opt. Laser Technol*., **148** 107507, 2022.
[9] Y. Taoka, K. Kawabata, P. Hemthavy, S. Choi, et al. "Development of Bipolar Electrostatic Chuck with a Beam-Array Assembly Fabricated by Lithography". *International Journal of Automation Technology*, *16*(4), 471-477, 2022.
[10] S. Choi†, *et al* "Development of a bipolar electrostatic chuck module with a beam-array assembly using the multiple etching process", *J. Micromech. Microeng.* **28** 125011, 2018,

AWARDS & GRANT

[1] Bilsland Fellowship **Jan 2027 – Mar 2027**
Elmore Family School of Electrical and Computer Engineering, Purdue University, $31,000 for a semester. (Pre-selected).

[2] Outstanding Presentation Award **Feb 2025**
The 10th 2025NCC, KR.

[3] Outstanding Presentation Award **Nov 2024**
Autumn 2025KSPE, KR.

[4] Best Presentation Award **May 2023**
The 18th 2023IEEE-NEMS, KR.

[5] Best Paper Award **Nov 2022**
The 9th 2022ASPEN, SG.

[6] Bronze Prize **Nov 2022**
Autumn 2022KSME, KR.

[7] Best Paper Award **Nov 2021**
Next generation lithography conference (2021OSK), KR.

[8] Excellence Presentation Award **Feb 2019**
2019KSEAJ, JP.

[9] ITO scholarship **Apr 2017 – Mar 2019**
ITO Foundation for International Education Exchange, JPY 180,000 per month, JP.

[10] Tour grant **Aug 2018**
The Precise Measurement Technology Promotion Foundation (PMTP-F), JPY 197,000 once, JP.

[11] MutoEiji academic excellence award **Mar 2017**
The Japan Society for Design Engineering (JSDE), JP.

[12] KR-JP joint scholarship **Apr 2013 – Mar 2017**
Korea and Japan Government, JPY 130,000 per month, KR&JP.

TEACHING EXPERIENCE

Course: [ECE 20001] Electrical Engineering Fundamentals I **(**Spring 2024)
Responsibilities: Greaduate teaching assistants, explaining the course material and answering questions in office hours.

SKILLS

Programming/software skills: Python, Matlab, LabView, ANSYS Lumerical/Mechanical, COMSOL Multiphysics, Solidworks.
Experimental Technique: Semiconductor manufacturing technique (Photo-lithography), optical system design (Vacuum system, microscopy, telescopy), optical defect measurement (Optical interferometry, scanning electron microscopy, focused-ion beam).