

# SEUNGMAN CHOI

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## EDUCATION & WORKING

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### Purdue University

PhD. in electrical and computational engineering department (GPA 3.94/4.00)

Super-resolution imaging through turbulence for space situational awareness

Developed a computational imaging algorithm for extreme and information-starved imaging scenarios [1,2,5].

West Lafayette, IN

Apr 2022- Current

### Korea Advanced Institute of Science and Technology (KAIST)

Research associate in Mechanical engineering department

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].

Daejeon, KR

Apr 2019- Aug 2022

### Tokyo Institute of Technology (Ti-tech)

M.S & B.S in Mechanical Engineering (Magna Cum Laude)

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].

Tokyo, JP

Apr 2013- Mar 2019

## RELATED PUBLICATIONS LIST

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‡: 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, et 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  $\mu\text{m}$  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/acsp Photonics.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

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[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 (PMTF-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

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**Course:** [ECE 20001] Electrical Engineering Fundamentals I (Spring 2024)

**Responsibilities:** Graduate teaching assistants, explaining the course material and answering questions in office hours.

## SKILLS

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**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).