JIN HYEONG KIM

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Education

Mar 2024 - Present **M.S. in Electrical Engineering**
KAIST (Korea Advanced Institute of Science and Technology)
Focus: *High-Dimensional Optimization, Organic Light-Emitting Diodes*
Advisor: *Prof. Seunghyup Yoo* — Total GPA of 3.95/4.3 (96.50/100)

Mar 2018 - Feb 2024 **B.S. in Material Science and Engineering**
KAIST (Korea Advanced Institute of Science and Technology)
Total GPA of 3.69/4.3 (93.90/100)

Research Experience

Graduate Research Assistant **IOEL (Integrated Organic Electronics Lab), EE, KAIST**

Optimization of Complex Systems

Apr 2025 - Present **Bayesian Optimization for OLED Engineering**
Built Bayesian optimization framework for high-dimensional, design-constrained OLED engineering problem to achieve high normal directionality for AR/VR application
Developed an algorithm encompassing data-archiving, warm-start and k-NN-based regression to address blackbox constraints and enhance optimization efficiency
Achieved 12% increase of current efficiency compared to conventional hemispherical micro-lens arrays (MLAs)

Jun 2024 - Mar 2025 **Multi-objective Optimization Tool for Light Outcoupling Enhancement in OLEDs**
Designed multi-objective optimization algorithm for enhancing light emission characteristics in a free-form MLA + OLED system based on genetic algorithm using Pareto solutions and penalty function approach
Achieved 63% EQE (near +3% enhancement compared to conventional hemispherical MLAs)
Presented in KMiD 2025 (Korean Meeting on Information Display)

Phototherapeutic Device Engineering

Jan 2025 - Present **Monte-Carlo Simulation-based Scattering Layer Design for Phototherapeutic Applications**
Built Monte-Carlo-based photon tracing simulation model leveraging hollow nanoparticles as scatterers for enhanced light diffusion
Fabricated wearable phototherapeutic devices consisting of LED arrays and scattering layer

Sep 2023 - Mar 2025 **Clinical Effect of Blue-suppressed Light Source** *funded by LG Electronics*
Fabricated blue-suppressed light device and designed protocol for clinical studies to observe hormonal changes and the effect on stress and sleep quality

ML/Optimization Works

Aug 2025 - Present **Transformer-based Model for Prediction of Geometry Generation Failure in LightTools™** *co-advised by Prof. Insu Han, EE, KAIST*
Developed a transformer-based model to predict spline generation failure in LightTools™, supporting 'Bayesian optimization of OLED design'
Achieved predictive accuracy over 95% via feature engineering and hyperparameter tuning

Jul 2025 - Present **Largely Fabricable Paraboloidal Lens for High-directional OLEDs**
Branched project of 'Bayesian Optimization for OLED Engineering' that aims to promote industrial applicability by optimizing paraboloidal lens with higher fabricability

Work Experience

Mar 2021 - Sep 2022 **Mandatory Military Service**

Jan 2021 - Feb 2021 **Intern, NAND QE1 Team, SK Hynix**
Research project on 'HTDR Pre EW Fast Cycle Time Reduction and Evaluation'

Scholarship

Mar 2021 - Present **SK Hynix Scholarship** 9500$ / year

Teaching

Sep 2025 - Feb 2026 **Counseling Assistant, Dept. of Electrical Engineering**

Sep 2025 - Dec 2025 **Teaching Assistant, Advanced Digital System Design (EE.40005)**

Mar 2025 - Jun 2025 **Teaching Assistant, Semiconductor Devices (EE362)**

Sep 2024 - Dec 2024 **Teaching Assistant, Introduction to Electronics Design Lab (EE302)**

Extracurricular

Mar 2025 - Aug 2025 **International Student Recruitment Committee, School of EE, KAIST**
Coordinated and served as an instructor in *KAIST EE Camp 2025* for international students from 13 countries and assisted in the recruitment process

Mar 2023 - Feb 2024 **Mentor, Samsung Dreamclass, Samsung Welfare Foundation**
Mentored 10 underprivileged middle school students to support academics and career exploration

Mar 2019 - Feb 2021 **Vice President, Dept. of MSE Student Council, KAIST**
Organized 10+ department events participated by professors, graduates and undergraduates
Contributed in organizing untact department affairs during COVID-19

Technical Skills

Programming and ML Tools (MATLAB, Python (PyTorch, scikit-learn))

Optic Simulations (LightTools, Lumerical, MATLAB)

Device Fabrication (Atomic Layer Deposition, Thermal Evaporation, Reactive Ion Etching)

Device Characterization (Atomic Force Microscopy, OLED Characterization)

Languages

English (fluent, TOEFL iBT: 110), Korean (native)