

Wei-Shan (Stan) Weng

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Education

National Taiwan University

Bachelor of Science in Engineering

- Major: Electrical Engineering
- Overall GPA 4.02/4.3 (3.88/4.0)

Taipei, Taiwan

Sept. 2020 - Dec. 2024

Publication

Wei-Shan Weng, Ao Yi Sim, Chi-Feng Lee, and Homer H. Chen, "Addressing crosstalk in spatial-multiplexing light field displays using polarization," Proc. SPIE 13414, Optical Architectures for Displays and Sensing in Augmented, Virtual, and Mixed Reality (AR, VR, MR) VI, 1341455 (Presented at SPIE AR | VR | MR: January 27, 2025)

Research Experience

Multiplane Phase Imaging Using Moiré Metalens and Deep Learning

Optical System Lab, National Taiwan University

Undergraduate Researcher | Advisors: **Yaun Lou**

- Built an optical system featuring a Moiré metalens tunable focus distance, enabling multiplane intensity imaging.
- Trained a UNet-based model to perform intensity-phase transformation.
- Integrated the optical system and the deep learning model for multiplane phase imaging.

Taipei, Taiwan

Sept. 2024 - Jan. 2025

Human Ultrasound Imaging using Physics-Inform Machine Learning

Caltech Optical Imaging Lab, California Institute of Technology

Summer Undergraduate Research Fellowship (SURF) | Advisor: **Lihong Wang**

- Quantified the sensitivity of Full Waveform Inversion to real-world imperfections, including transducer noise, positioning errors, and geometry mismatches, to understand the limitations of the conventional method.
- Incorporated the partial differential equation for acoustic wave propagation into a neural network's loss function to predict wave propagation.
- Successfully trained the neural network, achieving peak error of less than **1.5%** in both homogeneous and inhomogeneous media.

CA, United States

June 2024 - Aug. 2024

Auto-focusing Algorithm for dual-modality Optical Coherent Tomography

Z-Laboratory, Washington University in St. Louis

Summer Undergraduate Research Fellowship | Advisor: **Zhou Chao**

- Developed an auto-focusing algorithm to automatically adjust the sample's position in both axial and lateral directions for an Octoscope, which combines optical coherence tomography and a microscope.
- Reduced **two hours** of manual calibration effort per experiment.
- Received an **Honorable Mention** Award at the McKelvey Engineering Summer Research Poster Competition.

MO, United States

June 2023 - Aug. 2023

LCoS-based Light Field Projector

Multimedia Processing and Communications Lab, National Taiwan University

Undergraduate Research | Advisor: **Homer Chen**

- Integrated an LCoS micro-display with a light field projector to achieve high-brightness, visually comfortable outdoor AR applications.
- Proposed a novel polarization-alternating beamsplitter to direct light for the LCoS micro-display while preventing crosstalk between light field subviews, allowing the integration of the LCoS micro-display and the light field projector
- **First-author** publication accepted at **SPIE AR|VR|MR 2025**(Oral).

Taipei, Taiwan

Sept. 2022 - Dec. 2024

Awards

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|------|--|-------------------|
| 2025 | SPIE Photonics West 2025 Student Conference Support , Foundation for the Advancement of Outstanding Scholarship | SF, United States |
| 2024 | Summer Undergraduate Research Fellowship , California Institute of Technology | CA, United States |
| 2023 | International Student Research Fellowship , Washington University in St. Louis | MO, United States |
| 2023 | Honorable Mention (Top 3/50 posters) , McKelvey Engineering Summer Research Poster Competition | MO, United States |
| 2023 | First Place , Embedded Systems Final Project | Taipei, Taiwan |
| 2021 | Best Creative , Final creative contest of EECS design and implementation | Taipei, Taiwan |

Teaching Experience

Photonics Laboratory
Teaching Assistant | Professor: **Lung-Han Peng** and **Yu-Hsiang Cheng**

Taipei, Taiwan
Sept. 2024 - Dec. 2024

- Assisted in setting up optical systems for experiments, including structured light, Michelson interference, and holography.
- Provided guidance to undergraduate students in performing and understanding photonics experiments.

Extracurricular Activities & Leaderships

NTUEE Basketball Team
Leader | [[Team Website](#)]

Sept. 2022 - July. 2023

- Led practice of 40 members twice a week, from 6:30 p.m. to 9:30 p.m.
- Won second place among 38 teams in 2023 NTU Basketball Cup.

NTUEE Student Association
Minister of Sport Department

Sept. 2022 - July. 2023

- Managed administrative tasks for eight sports teams, overseeing activities for over 150 students.

NTUEE Light Dance
Software Team Member/Dancer | [[Github](#)][[Video](#)]

Jan. 2023 - April 2023

- Contributed to the development of LightDanceEditor, an online software for editing light effects for light dance performances, by implementing a real-time co-editing feature.
- Received over 340,000 views for the lightdance performance on YouTube.

NTUEE Student Association
Minister of Sport Department

Sept. 2022 - July. 2023

- Managed administrative tasks for eight sports teams, overseeing activities for over 150 students.

Skills

Programming

Python (PyTorch; NumPy), C/C++, Matlab, Web (HTML; CSS; JavaScript).

Miscellaneous

Optical Experiment, Linux, Docker, LaTeX, Git.

Languages

Mandarin Chinese (Native), English (Professional; TOEFL: 108/120).