Ryota Maeda

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Research Interests

- Computer Vision
- Polarimetric Imaging
- Computer Graphics
- Light Transport Analysis
- Computational Imaging
- 3D Reconstruction

Work Experience

Pohang University of Science and Technology (POSTECH) **Apr. 2026 – Present**
Postdoctoral Researcher

Education

University of Hyogo **Apr. 2022 – Mar. 2026**
Ph.D. of Engineering
Supervisor: Prof. Shinsaku Hiura

University of Hyogo **Apr. 2020 – Mar. 2022**
Master of Engineering
Supervisor: Prof. Shinsaku Hiura

University of Hyogo **Apr. 2016 – Mar. 2020**
Bachelor of Engineering

Publications

Real-world Polarimetric Environment Map Dataset **Dec. 2026**
Yonghee Oh*, **Ryota Maeda***, Yunseong Moon, Seung-Hwan Baek *(*Equal contribution)*
SIGGRAPH Asia 2026

Transient Polarimetry **Jul. 2026**
Oscar Pueyo-Ciutad, Guillermo Enguita-Lahoz, Yunseong Moon, **Ryota Maeda**, Seung-Hwan Baek, Albert Redo-Sanchez, Diego Gutierrez
SIGGRAPH 2026 Poster

Broadband Hyperspectral 3D Imaging using Dispersed Structured Light **Jul. 2026**
Suhyun Shin, Yunseong Moon, **Ryota Maeda**, David B. Lindell, Kiriakos N. Kutulakos, Seung-Hwan Baek
SIGGRAPH 2026

End-to-End Optimization of Polarimetric Measurement and Material Classifier **Mar. 2026**
Ryota Maeda*, Naoki Arikawa*, Yutaka No, Shinsaku Hiura *(*Equal contribution)*
21st International Conference on Computer Vision Theory and Applications (VISAPP 2026)

Hyperspectral Polarimetric BRDFs of Real-world Materials **Dec. 2025**
Yunseong Moon, **Ryota Maeda**, Suhyun Shin, Inseung Hwang, Youngchan Kim, Min H. Kim, Seung-Hwan Baek
SIGGRAPH Asia 2025

Event Ellipsometer: Event-based Mueller-Matrix Video Imaging **Jun. 2025**
Ryota Maeda, Yunseong Moon, Seung-Hwan Baek
IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR), *Highlight*

Dense Dispersed Structured Light for Hyperspectral 3D Imaging of Dynamic Scenes **Jun. 2025**
Suhyun Shin, Seungwoo Yoon, **Ryota Maeda**, Seung-Hwan Baek
IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)

Polarimetric Light Transport Analysis for Specular Inter-reflection **May. 2024**
Ryota Maeda, Shinsaku Hiura
IEEE Transactions on Computational Imaging, 2024

Refinement of Hair Geometry by Strand Integration **Oct. 2023**
Ryota Maeda, Kenshi Takayama, Takafumi Taketomi
Computer Graphics Forum (Proceedings of Pacific Graphics 2023)

EpiScope: Optical Separation of Reflected Components by Rotation of Polygonal Mirror **Dec. 2021**
Ryota Maeda, Shinsaku Hiura
SIGGRAPH Asia 2021 Technical Communications

Visiting Research Experience

POSTECH Computational Imaging Group **Mar. 2024 – Feb. 2025**
Visiting Research *11 months*
Mentor: Prof. Seung-Hwan Baek

CyberAgent AI Lab **Aug. 2022 – Sep. 2022**
Research Intern *2 months*
Mentors: Dr. Kenshi Takayama and Dr. Takafumi Taketomi

NAIST Optical Media Interface Lab **Aug. 2018**
Research Intern *1 month*
Mentors: Prof. Hiroyuki Kubo and Prof. Yasuhiro Mukaigawa

Software on GitHub

Polanalyser | ☆223 stars
Polarization image analysis tool. Demosaicing, Stokes vector, Mueller matrix.

structuredlight | ☆173 stars
Generate and Decode structured light. Binary, Gray, XOR, Ramp, Phase-Shifting, Stripe.

EasyPySpin | ☆113 stars
cv2.VideoCapture like wrapper for FLIR Spinnaker SDK.

Skills

Programming: Python, C++
Hardware Development: Electronic circuit design, Embedded systems, 3D CAD
Visual Content Creation: Photography, Image processing, Scientific illustration
Language: Japanese (native), English (advanced)