HYUNGJUN DOH

Ph.D. Student, Electrical and Computer Engineering | Purdue University | West Lafayette, IN
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PROFILE

Deep learning researcher specializing in 3D/4D reconstruction, with a focus on human-object interaction and 4D scene editing. Experienced in human-computer interaction research for virtual, augmented, and mixed reality. Research expertise includes Gaussian Splatting, diffusion models, neural fields, and context-aware content generation for robotics, XR, and digital twins.

EDUCATION

Ph.D. in Electrical and Computer Engineering 2026 – Present
Purdue University *West Lafayette, IN*
Advisor: Dr. Lu Su

M.S. in Electrical and Computer Engineering 2024 – 2026
Purdue University *West Lafayette, IN*
Advisor: Dr. Karthik Ramani, Convergence Design Lab
Thesis: *Toward Context-Aware Content Generation: Human-Object Interaction Reconstruction and 4D Scene Editing*

B.S. in Computer Engineering 2018 – 2023
Purdue University, Dean's List *West Lafayette, IN*
Completed two years of military service, 2019 – 2021

EXPERIENCE

Research Assistant Aug. 2024 – Present
Purdue University *West Lafayette, IN*
Advisor: Dr. Karthik Ramani

- Proposed training-free text-driven 4D scene editing with 4D Gaussian Splatting, ensuring spatial and temporal consistency in multi-view video settings. CVPR 2026 → **[C4]**
- Presented a template-free occlusion identification method and temporally consistent amodal completion pipeline for 3D human-object interaction reconstruction. ACM MM 2025 → **[C3]**
- Developed a Unity-based AR interface for authoring context-aware instructions and implemented a custom evaluation platform for user validation studies. CHI 2025 → **[C2]**
- Implemented an MR interface for learning assembly tasks with visual representations of causal relationships, improving user comprehension. TVCG → **[J2]**

Research Intern Jan. 2024 – Jul. 2024
Yonsei University & Yeungnam University *Seoul, Korea*
Advisor: Dr. Jeong Hoon Byeon

- Implemented an autonomous tracking system by fine-tuning a YOLOv8 model to monitor lizard motion and plant growth dynamics in aerosol-exposed environments.

Undergraduate Research Assistant Jan. 2023 – Dec. 2023
Purdue University *West Lafayette, IN*
Advisor: Dr. Karthik Ramani

- Reviewed 51 generative AI papers and defined the Output Modalities dimension in a human-GenAI interaction taxonomy. arXiv → **[J1]**
- Developed a gesture-controlled AR presentation interface to evaluate the impact of AI-generated multimodal content on storytelling and user perception. arXiv → **[C1]**

Team Leader Aug. 2022 – May 2023
Vertically Integrated Projects, Purdue University *West Lafayette, IN*
Advisor: Dr. Mohammad Jahanshahi

- Implemented a semantic segmentation network to detect defects on construction sites.
- Generated 56 crack and scratch datasets, each comprising 308 images, using Houdini.

Training Instructor and Squad Leader Aug. 2019 – Mar. 2021
Republic of Korea Army *Daegu, Korea*

- Served in a recruit training battalion, organizing drill plans and ensuring adherence to safety protocols.
- Led 18 drill instructors and trained approximately 2,100 army recruits.

PUBLICATIONS

- **[C4]** D. Lee*, H. Doh* et al., "Dynamic-eDiTor: Training-Free Text-Driven 4D Scene Editing with Multimodal Diffusion Transformer," *CVPR 2026*. Link
- **[C3]** H. Doh et al., "Occlusion-Aware Temporally Consistent Amodal Completion for 3D Human-Object Interaction Reconstruction," *ACM MM 2025*. Link
- **[C2]** J. Shi*, R. Jain*, S. Chi*, H. Doh et al., "CARING-AI: Towards Authoring Context-aware Augmented Reality Instruction through Generative Artificial Intelligence," *CHI 2025*. Link
- **[C1]** H. Doh et al., "An Exploratory Study on Multi-modal Generative AI in AR Storytelling," *arXiv*. Preprint.
- **[J2]** R. Jain*, J. Shi*, A. Benton, M. Rasheed, H. Doh et al., "Visualizing Causality in Mixed Reality for Manual Task Learning: Exploratory Study," *TVCG*. Link
- **[J1]** J. Shi*, R. Jain*, H. Doh et al., "An HCI-Centric Survey and Taxonomy of Human-GenAI Interactions," *arXiv*. Link

TEACHING

- Graduate Teaching Assistant
  - ECET 43900 - Advanced Digital Signal Processing (Spring 2026)
  - ECET 32700 - Instrumentation And Data Acquisition Design (Spring 2026)
  - ECET 34900 - Advanced Digital Systems (Fall 2025)
  - ECET 33900 - Digital Signal Processing (Fall 2025)
  - MA 16200 - Calculus II (Spring 2025)
  - MA 16500 - Calculus I (Fall 2024)
- Undergraduate Teaching Assistant
  - ECE 57000 - Artificial Intelligence (Fall 2023)

REVIEW

- Reviewer, CHI 2025

LEADERSHIP

- President, KSEA YG Purdue (2021 – 2022)

AWARDS AND HONORS

- Howard J. Heim Memorial Scholarship; ECE Great Work Award, Purdue University, Spring 2023
- Summer Undergraduate Research Fellowship, Purdue University, Summer 2023
- Purdue Dean's List, 2018 – 2023
- Purdue Semester Honors, 2019 – 2023

SKILLS

Programming	Python, C/C++, C#, Java, Verilog
ML / Vision	PyTorch, OpenCV, YOLOv8, Gaussian Splatting, diffusion models, neural fields
Tools	Linux, Git, VS Code, MATLAB, Unity, Blender, Houdini