

# Jaehyeok Shim

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## EDUCATION

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| <b>Ulsan National Institute of Science &amp; Technology (UNIST)</b><br>Ph.D. in Artificial Intelligence; Advisor: Prof. Kyungdon Joo                                                                                                        | Ulsan, Republic of Korea<br>Mar. 2025 – Present   |
| <b>Ulsan National Institute of Science &amp; Technology (UNIST)</b><br>M.S. in Artificial Intelligence; Advisor: Prof. Kyungdon Joo<br>– Research contribution: Diffusion-Based Signed-Distance-Fields for 3D Shape Generation (CVPR 2023). | Ulsan, Republic of Korea<br>Sep. 2021 – Aug. 2023 |
| <b>Seoul National University of Science and Technology</b><br>B.S. in Electrical and Information Engineering; Double Major in Unmanned Vehicles Software                                                                                    | Seoul, Republic of Korea<br>Mar. 2015 – Aug. 2021 |

## RESEARCH EXPERIENCE

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| <b>Research Scientist Intern</b><br>Adobe<br>– Conducted research under the mentorship of Dr. Jaeshin Yoon.                                                                                                                                                                                                                                                                | Mar. 2025 – Jun. 2025<br>United States            |
| <b>Researcher</b><br>Ulsan National Institute of Science & Technology (UNIST)<br>– Designed latent models for 3D compression and generation under Prof. Kyungdon Joo.<br>– Contributed to DITTO: Dual and Integrated Latent Topologies for Implicit 3D Reconstruction (CVPR 2024) and ContactGen: Contact-Guided Interactive 3D Human Generation for Partners (AAAI 2024). | Sep. 2023 – Feb. 2025<br>Ulsan, Republic of Korea |
| <b>Sergeant, Information Systems Specialist</b><br>Republic of Korea Army, 1st Division                                                                                                                                                                                                                                                                                    | Aug. 2016 – May 2018<br>Paju, Republic of Korea   |

## PUBLICATIONS

- DentiField: Implicit Surface Semantic Field for Intraoral Mesh Segmentation** | WACV 2027
- **Jaehyeok Shim**, Soomin Ham, Kyungdon Joo.
  - Direct intraoral mesh segmentation that repurposes a pretrained implicit 3D model (TripoSG) as a surface semantic field.
- Trip-to-Gaussian: A Versatile Framework for Unconditional 3D Generation** | TMLR 2026
- Youngwoo Jeon, Inhyeok Choi, **Jaehyeok Shim**, Sangjune Park, Kyungdon Joo. [Project] [Paper] [Code]
  - Coarse-to-fine unconditional 3D generation that converts triplane latents into high-quality 3D Gaussians.
- DITTO: Dual and Integrated Latent Topologies for Implicit 3D Reconstruction** | CVPR 2024
- **Jaehyeok Shim**, Kyungdon Joo. [Project] [Paper] [Code]
  - Point-cloud-to-mesh reconstruction using complementary point and grid latent representations.
- ContactGen: Contact-Guided Interactive 3D Human Generation for Partners** | AAAI 2024
- Dongjun Gu, **Jaehyeok Shim**, Jaehoon Jang, Changwoo Kang, Kyungdon Joo. [Project] [Paper] [Code]
  - Guided-diffusion model that generates human poses with physically plausible partner interactions.
- Diffusion-Based Signed-Distance-Fields for 3D Shape Generation** | CVPR 2023
- **Jaehyeok Shim**, Changwoo Kang, Kyungdon Joo. [Project] [Paper] [Code]
  - Coarse-to-fine diffusion framework for high-fidelity 3D shape generation from signed-distance fields.

## ACADEMIC CONTRIBUTIONS

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| <b>Peer Reviewer</b><br>– WACV 2027, AAAI 2027, NeurIPS 2026, ECCV 2026, CVPR 2026, NeurIPS 2025, ICCV 2025, CVPR 2025, IEEE TIP 2025 | Mar. 2024 – Oct. 2026 |
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## OPEN-SOURCE PROJECTS

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| <b>mesh2sdf-triton</b>   PyTorch, Triton                                                                                                                                                           | Sep. 2026      |
| – GPU-only, differentiable mesh-to-SDF library derived from Mesh2SDF, with Triton kernels and vertex gradients; about 34–44× faster than the original C++ CPU implementation on watertight meshes. |                |
| <b>kitsu</b>   PyTorch, DDP                                                                                                                                                                        | 2023 – Present |
| – PyTorch boilerplate stack with a distributed-data-parallel trainer similar to PyTorch Lightning.                                                                                                 |                |
| <b>space-filling-pytorch</b>   Triton                                                                                                                                                              | 2024           |
| – Library implementing space-filling curves, including Hilbert curves and Z-order, in Triton.                                                                                                      |                |
| <b>GEGLU-triton</b>   Triton                                                                                                                                                                       | 2024           |
| – Triton implementation of gated exponential linear units.                                                                                                                                         |                |
| <b>fast-GeM</b>   Triton                                                                                                                                                                           | 2024           |
| – Triton implementation of generalized mean pooling.                                                                                                                                               |                |