# Gyeongsu (Bob) Cho

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## Education

**Ulsan National Institute of Science and Technology (UNIST)**     2022 – Present
Integrated M.S.–Ph.D., Artificial Intelligence
Research focus: 3D/4D vision, generative models, 3D content creation

**Chung-Ang University (CAU)**     2018 – 2021
Bachelor of Engineering, Mechanical Engineering (Early Graduation)

## Research Interests

3D/4D reconstruction of animals and humans, multi-view and generative vision, Gaussian splatting, video understanding, real-time pose estimation.

## Publications

**Journal Articles**

[**J1**]. A paper on "Reference-Guided Video Anomaly Detection for Display Inspection", submitted to *TCSVT*.

[**J2**]. **DogRecon: Canine Prior-Guided Animatable 3D Gaussian Dog Reconstruction From a Single Image**
<u>Gyeongsu Cho</u>, C. Kang, D. Soon, K. Joo. *International Journal of Computer Vision (IJCV)*, 2025.

**Conference Papers**

[**C1**]. A paper on "4D Animal Mesh Reconstruction", submitted to *CVPR*

[**C2**]. **Pose-Diverse Multi-View Virtual Try-on from a Single Frontal Image**
S. Han*, M. Chung*, <u>Gyeongsu Cho</u>, K. Joo, T. Kim. *WACV*, 2026.

[**C3**]. **Avatar++: Fast and Pose-Controllable 3D Human Avatar Generation from a Single Image**
S. Han*, M. Chung*, <u>Gyeongsu Cho</u>, K. Joo, T. Kim. *ICCV 2025*, Wild3D Workshop.

[**C4**]. **Canine Prior-Guided Animatable 3D Gaussian Dog Reconstruction From a Single Image**
<u>Gyeongsu Cho</u>, C. Kang, D. Soon, K. Joo. *CVPR 2024, Computer Vision for Animals Workshop (Oral)*.

[**C5**]. **SlaBins: Fisheye Depth Estimation using Slanted Bins on Road Environments**
J. Lee, <u>Gyeongsu Cho*</u>, J. Park*, K. Kim*, S. Lee*, J. H. Kim, S.-G. Jeong, K. Joo. *ICCV*, 2023.

## Research & Industry Experience

**Graduate Researcher, UNIST – 3D/4D Vision & Graphics**     2022 – Present

- Lead author of **DogRecon (IJCV 2025)** and **4D Animal Reconstruction** on single-image 3D Gaussian dog reconstruction and 4D animal motion from monocular videos.
- Develop synthetic video pipelines, SMAL-based animal models, and PyTorch3D-based renderers for large-scale training and evaluation.
- Explore generative pipelines that lift text/video outputs into animatable 3D/4D representations.

**Research Collaboration with Samsung Electronics – Video Anomaly Detection**     2024 – 2025

- Co-develop a video anomaly detection framework for industrial display inspection, using real manufacturing data.
- Contributed to dataset design, model architecture, and experiments for a **TCSVT** submission.

**Startup Project – Real-Time 3D Human Pose Estimation (KIC & GWU Program)**     2024

- Built a **3-camera real-time 3D human pose estimation system** with smoothing algorithms for stable motion analysis in gyms.
- Designed the system as an AI-based personal training assistant to support.
- Selected for a Korean government startup support program and a 3-week entrepreneurship program at **George Washington University**.

- Conducted 50+ interviews with fitness and healthcare professionals across major U.S. cities and refined a US-market–focused business model; ranked **1st in track**.

**Teaching & Mentoring**

- Teaching Assistant: Linear Algebra (CAU), Computer Graphics (UNIST), Introduction to AI Programming 2 (UNIST).

- Tutor for a Hyundai Motor Company internal data/AI program (Python, data analysis).

## Grants & Awards

**AI Tech Open Workshop – Creative Project UNIST (Startup Track, 1st Place)** 2025

- Project: *Lightweight camera system and inference for 3D animal model reconstruction.*

- Awarded **30,000,000 KRW (20,000 USD)**; funding allocated as research budget for continued 3D animal reconstruction work (2026).

## Patents

- **Method and apparatus for reconstructing a 3D dog Gaussian model from a single image**
  Korean Patent Application 10-2025-0107831 (2025-08-05); PCT Application PCT/KR2025/019381.

- **Method and apparatus for generating a depth map of an image**
  Korean Patent Application 10-2023-0125078, with 42dot.

## Reference

**Prof. Kyungdon Joo**, Professor, UNIST
Relationship: M.S & Ph.D. advisor
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**Dr. Hezhen Hu**, Postdoctoral fellow, UT Austin,
Relationship: Collaborator
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