Curriculum Vitae

Jaehyeok Shim

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Education

Ulsan National Institute for Science and Technology (UNIST) — Ulsan, Republic of Korea
Master's Student — *Sep. 2021 – Aug. 2023*
Artificial Intelligence Graduate School
Advisor: Prof. Kyungdon Joo

Seoul National University for Science and Technology (SNUT) — Seoul, Republic of Korea
Undergraduate Student — *Mar. 2015 – Aug. 2021*
Department of Information and Electricity
Unmanned Software Engineering Program Track (Double Major)
Advisor: Prof. Yeejin Lee

Research Experiences

3D Vision & Robotics Lab, UNIST — Ulsan, Republic of Korea
Researcher, [link] — *Sep. 2023 – Current*

3D Vision & Robotics Lab, UNIST — Ulsan, Republic of Korea
Master's Degree, [link] — *Sep. 2021 – Aug. 2023*

Visual Computing Lab, SNUT — Seoul, Republic of Korea
Undergraduate Researcher, [link] — *Jun. 2020 – Aug. 2021*

International Conferences

[IC.3] **DITTO: Dual and Integrated Latent Topologies for Implicit 3D Reconstruction** (`under review`).

Jaehyeok Shim, Kyungdon Joo.

`DITTO` addresses a fundamental task in 3D computer vision: surface reconstruction from point clouds. We propose a new network architecture that effectively learns implicit occupancy fields by leveraging the synergy between grid and point-based latents. As a result, `DITTO` enables high-fidelity reconstructions, surpassing state-of-the-art methods in capturing sharp and detailed structures.

[IC.2] **ContactGen: Contact-Guided Interactive 3D Human Generation for Partners** (`AAAI 2024`).

Dongjun Gu, **Jaehyeok Shim**, Jaehoon Jang, Changwoo Kang, and Kyungdon Joo.

[Project Page] [Paper]

`Contactgen` introduces a novel approach for generating 3D human poses that interact realistically with a given another human. We utilize a guided diffusion framework, optimizing human poses to ensure physically plausible interactions. This optimization is based on the predicted contact area determined by the given type of interaction.

[IC.1] **Diffusion-Based Signed-Distance-Fields for 3D Shape Generation** (`CVPR 2023`).

Jaehyeok Shim, Changwoo Kang, Kyungdon Joo.

[Project Page] [Paper] [Code]

`SDF-Diffusion` is a framework for generating 3D shapes by utilizing diffusion models with signed distance fields for continuous 3D representations, such as meshes. This framework generates high-fidelity shapes through a two-stage process involving generation and super-resolution, leading to competitive performance in both unconditional and conditional 3D shape generation tasks.

AI Competitions

[C.9] **KYOWON Group OCR Challenge, DACON.**
(Dec. 2022) Rank 7/430 (2% win) [Site]
OCR task of the Korean language. Improved accuracy with transfer learning of ConvNeXT by proposing language-specific loss.

[C.8] **NAVER CLOVA AI-RUSH 2022 Round 2, NAVER CLOVA.**
(Aug. 2022) Rank 7/15 (46%) [Site]
A task that regresses a specific score of a given image. Improved accuracy with transfer learning of CoaT with various augmentation.

[C.7] **NAVER CLOVA AI-RUSH 2022 Round 1, NAVER CLOVA.**
(Aug. 2022) Rank 15/27 (56%) [Site]
A task that classifies given images. Improved accuracy through transfer learning of Efficient-NetV2 with various augmentations.

[C.6] **Ego-Vision Hand Gesture Recognition AI Contest, NIA; DACON.**
(Jun. 2021) Rank 3/290 (1%, win) [Code] [Site]
Classifies hand gestures from given images. Achieved high accuracy with transfer learning of EfficientNetV2 with cross-validation.

[C.5] **News Topic Classification AI Contest, DACON.**
(May. 2021) Rank 3/256 (1%, win) [Code] [Site]
Classifies topics of given text articles. Improved accuracy with Noisy Student training strategy about the BeRT-based model.

[C.4] **NAVER CLOVA AI-RUSH 2021 Round2, NAVER CLOVA**
(May. 2021) Rank 6/13 (46%) [Site]
Clustering of given text dataset. Improved model performance with self-supervised learning.

[C.3] **NAVER CLOVA AI-RUSH 2021 Round1, NAVER CLOVA**
(Apr. 2021) Rank 4/35 (11%) [Site]
Classification of given image dataset with limited model capacity. Achieved high accuracy with transfer learning of EfficientNetV2 with careful hyperparameter tuning.

[C.2] **Predicting Danger of System Log Messages, KAERI; DACON**
(Apr. 2021) Rank 2/152 (1%, win) [Site] [Description] [Code]
Finding out-of-distribution data that does not appear in the training dataset. I achieved high accuracy with DistilBeRT-based anomaly detection.

[C.1] **Finding Human Key-Points from Motion Images, DACON**
(Feb. 2021) Rank 1/156 (1%, win) [Site] [Description] [Code]
Estimating human key points from a given image dataset. I fine-tuned HRNet and EfficientDet and achieved high accuracy by proposing novel data-driven augmentations.