Yonwoo Choi

AI Research Engineer

Contact

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Email: yhugestar@gmail.com

Skills

Programming

Python, C++, MATLAB, Java

Libraries

PyTorch, TensorFlow, OpenCV, Open3D

Teaching

TA, Seoul National University

4190.408 - Artificial Intelligence

4190.773 - 3D Computer Vision

Coursework

Seoul National University

- Multimodal Deep Learning
- Advanced Graphics
- Advanced Data Mining
- Mobile and Ubiquitous Computing

University of Virginia

- Algorithms
- Data Structures
- Web Application
- Software Testing
- Computer Architecture
- Human Computer Interaction
- Software Development Methods

References

Hanbyul Joo

Assistant Professor at Seoul National University

hbjoo@snu.ac.kr

Raymond Pettit

Associate Professor at University of Virginia

raymond.pettit@virginia.edu

Education

Seoul National University

Seoul, South Korea

Master of Science in Computer Science and Engineering

Mar 2022 - Feb 2024

Advisor: Hanbyul Joo

Thesis: A Wrist Mounted Camera System for Hand Pose Estimation from Single RGB Images

GPA: 3.73/4.3

University of Virginia

Charlottesville, VA

Bachelor of Arts in Computer Science

Aug 2017 - May 2021

GPA: 3.93/4.0

Work Experience

CUBOX

Seoul, South Korea

AI Research Engineer

Mar 2024 - Present

3D Face/Body/Hands Reconstruction, Facial Performance/Appearance Capture

3D Face Generation/Synthesis

Alternative Military Service (전문연구요원)

Visual Computing Lab

Seoul, South Korea

Graduate Researcher

Nov 2021 - Feb 2024

Research in 3D Computer Vision, Human Pose Estimation, Reconstruction, Motion Capture System

Projects

Wrist Mounted Camera System for Hand Pose Estimation

Feb 2023 - Nov 2023

- Integrated 3 GoPro cameras and built hand motion capture system
- Developed a pipeline for collecting pseudo-ground-truth 3D hand pose data
- Implemented training code for baseline models
- Trained SOTA hand pose estimators with collected hand pose data and achieved superior results on existing benchmarks
- Enhanced hand bounding box detection with 3D Computer Vision techniques

Egocentric 3D Human Pose Estimator

Sep 2022 - Jan 2023

- Implemented unreleased training code, neural network architecture, data augmentation strategies from the paper "xR-Egopose" (ICCV 2019) which takes an image captured from an egocentric fisheye camera and outputs 3D human joints
- Achieved Mean per Joint Position Error (MPJPE) of 64mm compared to 59mm in the original paper

Multi-camera 3D Human Joint Reconstruction

Apr 2022 - Sep 2022

- Captured real world human pose data using GoPro cameras from 5 views
- Performed camera calibration to find camera parameters using Matlab's calibration toolbox
- Direct Linear Transform, Triangulation, Non Linear Optimization methods to reconstruct 3D human joints from 2D joints

Structure from Motion

Apr 2022 - May 2022

- Implemented the classical Structure from Motion (SfM) algorithm to reconstruct 3D point cloud scene from multiple images
- Implemented methods include Bundle Adjustment, Triangulation, Perspective-n-Point Algorithm

Panorama Generator

Feb 2022 - Apr 2022

- Created a panorama generator which takes a set of images of pure rotation as input, and creates a panoramic image
- Estimated Homograph Matrix by using correspondences between points in images and solving a system of linear equations
- Constructed Cylindrical Coordinates to help minimize distortion in wide-angle panoramas