YUDI DAI

Xiamen University ◇ Ph.D student

yudidai@stu.xmu.edu.com ◇ climbingdaily.github.io

RESEARCH INTEREST

My research interests lie in 3D Computer Vision, LiDAR mapping, and LiDAR human capture. My goal is to capture and understand the dynamic human, scene, and their interactions in the wild. I am advised by Prof. Cheng Wang and Prof. Chenglu Wen.

PUBLICATIONS

Yudi Dai, Yitai Lin, Chenglu Wen*, Siqi Shen, Lan Xu, Jingyi Yu, Yuexin Ma, Cheng Wang. "HSC4D: Human-centered 4D Scene Capture in Large-scale Indoor-outdoor Space Using Wearable IMUs and LiDAR." *CVPR* 2022. [Project | Paper]

Yudi Dai, Chenglu Wen*, Hai Wu, Yulan Guo, Longbiao Chen and Cheng Wang. "Indoor 3D Human Trajectory Reconstruction Using Surveillance Camera Videos and Point Clouds." *IEEE TCSVT* 2021. [Paper]

Cheng Wang*, **Yudi Dai**, Naser El-Sheimy, Chenglu Wen, Guenther Retscher, Zhizhong Kang and Andrea Maria Lingua. "ISPRS BENCHMARK ON MULTISENSORY INDOOR MAPPING AND POSITIONING." *ISPRS Annals*, 2020. [Project | Paper]

Chenglu Wen*, **Yudi Dai**, Yan Xia, Yuhan Lian, Jinbin Tan, Cheng Wang, and Jonathan Li. Toward efficient 3-d colored mapping in GPS-/GNSS-denied environments. *IEEE GRSL* 2019. [Project | Paper]

EDUCATION

Department of Computer Science, Xiamen University Ph.D student	Sep 2019 – Present
Department of Cognitive Science, Xiamen University Master student	Sep 2017 – Jun 2019
Department of Cognitive Science, Xiamen University Bachelor of Engineering	Sep 2012 – Jun 2016

PROJECTS

LiDAR Human Motion Research [Project page]   June 2021 – Present
A cooperative research project with ShanghaiTech University. Using a LiDAR and IMUs to capture the dynamic human and scenes in the real complex world. My work focus on the human-centered 4D scene capture, human capture in the wild.

- Proposed Human-centered 4D Scene Capture (HSC4D) for creating a human-centered dynamic digital world, which is space-free, pose-free, and interaction-free. The work is accepted to **CVPR 2022**.
- Proposed HSC4D dataset, containing three large scenes (1k-5k m^2) with dynamic human motions.
- Currently is working on LiDAR-based Human-Scene capture in the wild.

Localization And 3D Reconstruction In Non-cooperative Environment   Apr 2020 – Oct 2020
A cooperative research project with an institute in Beijing. Aim for 3D scene modeling and 3D scene capture under non-cooperative conditions concealment and rapidly. My work focus on multi-model data fusion, 3D reconstruction in poor conditions.

MiMAP Benchmark [Project page]   Apr 2019 – Feb 2020

A project supported by the ISPRS Scientific Initiatives 2019. Aiming to provide a benchmark on multisensorial indoor mapping and positioning. My work focus on LiDAR-based SLAM and ground-truth generation.

- Upgraded a multi-sensory backpack system to build the benchmark.
- Lead and organized the dataset creating, wrote a paper to introduce the dataset.
- The dataset has been downloaded over 5000 times by researchers from 34 countries and regions.

3D Reconstruction Of Indoor Parking Lot [Demo page]   Jan 2018 – Sep 2018

A cooperative project with ZongmuTech. Using vehicle-mounted LiDAR and cameras to scan the parking lot for colored high-precision 3D map reconstruction and parking space lines segmentation. My work focus on 3D map reconstruction and multi-sensor calibration.

- Developed a high-precision mapping software for ZongmuTech. The technology is applied to L4-level autonomous valet parking (AVP) products.
- ZongmuTech is qualified to supply for mass-produced models of China FAW Hongqi in 2020.

PARTICIPATED GRANTS

National Natural Science Foundation of China, General Project, 62171393   2022 – Present
Toward Weakly Supervised Learning of Point Cloud Sequences of 3D Perception in Urban Dynamic Scenes

National Natural Science Foundation of China, General project, 61771413   2018 – 2021
Research on large-scale object labeled dataset generation method based on joint measurable point cloud/multi-view image

AWARDS

Top Ten Outstanding Student Association (Mountaineering Club Leader)	2015
Sport Activity Achievement Scholarship	2014
Merit Student of Xiamen University	2014
The First Prize Scholarship of Xiamen University	2013

SKILLS

Tools: Python, C++, Linux, LaTeX

Communication: Chinese, English (Fluent in reading and writing, intermediate level of speaking)

PERSONAL INFORMATION

Nationality: Chinese   **Gender:** Male   **Date of birth**: Dec 30, 1993