Hanzhi Chen

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EDUCATION

TECHNICAL UNIVERSITY MUNICH | M.Sc. in Robotics, Cognition, Intelligence
Sep 2019 - Aug 2022 | Munich, DE
Cum. GPA: 1.2 / 1.0, with high distinction, rank: Top 6%

BEIJING INSTITUTE OF TECHNOLOGY | B.Sc. in Mechanical Engineering
Sep 2015 - Jul 2019 | Beijing, CN
Cum. GPA: 89 / 100, rank: Top 5%

EXPERIENCE

TU MUNICH | Scientific Assistant (PhD Student)
Nov 2022 - Now | Smart Robotics Lab | Munich, DE
Supervisor: Prof. Stefan Leutenegger

- Research on object-centric perception, scene understanding, spatial AI.

HOVER INC. | Research Intern
Jun 2022 - Sep 2022 | Applied Research Team | San Francisco, US (Remote)
Supervisor: Dr. Tolga Birdal (Imperial College London)

- Work on generative models to produce semantically meaningful CAD models of residential properties using images from regular smartphones.

TU MUNICH | Student Researcher
Feb 2021 - Jun 2022 | Chair for Computer Aided Medical Procedures & Augmented Reality (CAMP) | Munich, DE
Supervisor: Prof. Nassir Navab, Dr. Benjamin Busam, Dr. Fabian Manhardt (Google Research)

- Work on temporally consistent monocular depth estimation and self-supervised 6D pose estimation.
- Conduct intensive study on transformer (self- and cross-attention) and neural rendering.
- Propose a novel Spatial-temporal Attention mechanism to enable state-of-the-art temporally consistent depth estimation.
- Formulate a novel self-supervision paradigm for the task of 6D pose estimation by separating this task into geometry estimation and texture learning.

ZEISS GROUP | Student Researcher
Mar 2021 - Jul 2021 | Cooperate Research Department | Munich, DE
Supervisor: Dr. Ghazal Ghazaei, Dr. Stratis Tzoumas

- Work on domain adaptation for label-efficient medical image segmentation.
- Implement style transfer pipeline based on generative adversarial networks (GAN) for domain translation.

BMW GROUP | Research & Development Intern
Oct 2018 – Feb 2019 | Automated Driving Department | Beijing & Shanghai, CN

- Assist in ADAS functions testing and traces pre-analysis.
- Modify ADTF model for reconstruction of the project configuration to evaluate objects detection (ADTF).
- Develop ADAS Benchmark video analysis software.

PUBLICATION

Hanzhi Chen , Fabian Manhardt, Nassir Navab, Benjamin Busam, "TexPose: Neural Texture Learning for Self-Supervised 6D Object Pose Estimation ." IEEE Conference on Computer Vision and Pattern Recognition (CVPR) 2023

Hanzhi Chen *, Patrick Ruhkamp*, Daoyi Gao*, Nassir Navab, Benjamin Busam, "Attention meets Geometry: Geometry Guided Spatial-Temporal Attention for Consistent Self-Supervised Monocular Depth Estimation." International Conference on 3D Vision (3DV) 2021

PROJECTS

DOMAIN ADAPTATION FOR ANNOTATION-EFFICIENT IMAGE SEGMENTATION

Learning-based method for semantic segmentation has indicated superior performance for medical image understanding and analysis, while such method requires a large amount of expert annotations to supervise the training procedure. We therefore aim to develop a domain adaptation method to overcome such shortcoming. In this project, I build a adaptation model based on CycleGAN. I further propose two novel loss called style-transfer loss and content-preserving loss for better domain translation performance. The experimental results show that our methods can successfully achieve adaptation on unseen domains and on-par segmentation performance with much less supervision from manually labelled data.

REC4AUG: AN EFFICIENT PIPELINE FOR REALISITIC AND CONTROLLABLE TRAFFIC SCENE DATA GENERATION

We aim to design a system which can build dense environmental maps from monocular video data and further augment the scene with virtual objects to generate realistic urban scene data. In this project, I was mainly focused on modification and improvement to InfiniTAM v3 system for outdoor scene reconstruction, besides I also built an automatic pipeline in Blender to augment the 3D scenes with virtual objects.

All projects above are provided with links for inspection. Please click their titles if interested.

TEACHING

I used to be Student Teaching Assistant for the following M.Sc. level lectures:

- [IN2062] Techniques in Artificial Intelligence (Lecturer: Prof. Matthias Althoff), WS 2021
- [IN2346] Introduction to Deep Learning (Lecturer: Prof. Matthias Niessner & Prof. Laura Leal-Taixé), WS 2020
- [IN2346] Introduction to Deep Learning (Lecturer: Prof. Matthias Niessner & Prof. Laura Leal-Taixé), SS 2020

All lectures above have 1K+ participants per semester. My main tasks are:

- Create coding exercises and write tutorials for students.
- Address theoretical and coding questions raised by students during weekly office hours.
- Design final exam questions and solutions, organize exam procedures, and grade exam answer sheet.

AWARDS

Deutschlandstipendium - German National Scholarship Program, 2021-2022. (Top 1%, Funded by Allianz SE)

SKILLS

PROGRAMMING

Python • Matlab • C/C++ • LaTeX

TOOLS

PyTorch • OpenCV • Open3D • CARLA • Blender