Tony Danjun **Wang**

COMPUTER SCIENCE · GRADUATE STUDENT

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Educational Foundations

Technical University Munich (TUM) — Munich, Germany
M.SC. IN COMPUTER SCIENCE — (Oct '22 -- *Present*)
- Current Grade: 1.1/1.0 (best; top 3%)
- Focus on Surgical Data Science, 3D Computer Vision

Technical University Munich (TUM) — Munich, Germany
B.SC. IN COMPUTER SCIENCE — 3 Y. (Oct '19 -- Oct '22)
- Grade: 1.4/1.0 (best; top 7%)
- ⚔ Thesis: 3D Holistic OR Anonymization (Supervisor: Prof. Nassir Navab)

Publications

MICCAI'23 — 🌐 Project Page | 🗐 Paper | ⌨ Code
SegmentOR: Obtaining Efficient Operating Room Semantics Through Temporal Propagation
L. Bastian*, D. Derkacz-Bogner*, **T. D. Wang**, B. Busam, N. Navab

IPCAI'23 — 🌐 Project Page | 🗐 Paper | ⌨ Code
DisguisOR: Holistic Face Anonymization for the Operating Room.
T. D. Wang* (*Presenting Author*), L. Bastian*, T. Czempiel, B. Busam, N. Navab

Selected Projects

In Pursuit of Precision: Analysis of Synthetic Human Reconstructions — ⌨ Code
4D Human Reconstruction · Synthetic Human Motion Generation · Multi-Model Fusion · Blender · PyTorch — Python
- **Curated** synthetic human scene interaction **dataset**
- **Developed** corresponding baseline method for **4D human reconstruction**
- Method included **multi-view human shape estimation (SMPL)**, **2D segmentation**, and **image normal estimation**

3D-XVIGR: End-to-End Transformer Model for 3D Visual Grounding on Point Clouds — ⌨ Code
3D Visual Grounding · Point Cloud Transformer · Vision-Language · MeshLab · PyTorch — Python
- **Introduced** a **simple yet effective** model for **localization of 3D objects using natural descriptions** (*Visual Grounding*)
- Method merely relies on **vanilla transformer** encoder and decoder.
- Designed decoder layer to easily incorporate and **align natural text and 3D data**

Point-Set Alignment Using Weak Labels — ⌨ Code
3D Point Set Registration · Human Shape Estimation · Synthetic Human-Object Registration Generation — Python
- **Implemented deep learning** model for robust **mesh to point cloud registration** of human heads
- **Created registration dataset** by sampling human shapes and transforming the head
- **Applied model** on **face detection** in multi-view RGB-D datasets

Research Experience

LMU Klinikum and **CAMP at TUM** — Munich, Germany
PROJECT ASSOCIATE - OPEN SURGERY RECONSTRUCTION AND ANALYSIS — (June '24 -- *Present*)
3D Scene Reconstruction · 3D Hand Pose/Shape Tracking · Multi-View RGB-D Capturing — Python
- **Led logistical and technical coordination** for high-definition cadaver surgery recordings
- **Developed 3D visualization techniques** using methods like **Gaussian Splatting** and **NeRF**, for photorealistic procedural renderings

Chair for Computer Aided Medical Procedures (CAMP) at TUM — Munich, Germany
STUDENT RESEARCH ASSISTANT - VOLUME REGISTRATION — 9 M. (Aug '23 -- Apr '24)
Real-Time OCT Volume Registration · Image Alignment · Key-Point Correspondence Estimation — Python
- **Introduced novel method** for context-aware **real-time semantic view expansion** of intraoperative 4D OCT
- Focus on joint learning of **correspondence matching** for transformation estimation and **tool segmentation**

Chair for Computer Aided Medical Procedures (CAMP) at TUM — Munich, Germany
STUDENT RESEARCH ASSISTANT - POINT CLOUD SEGMENTATION — 1 Y. (Apr '22 -- Apr '23)
3D Point Cloud Segmentation · Weakly Supervised · RGB & Point Cloud Export · Matroska — C++, Python
- Assisted with **weakly supervised 3D semantic segmentation** using temporal propagation
- **Implemented annotation tools** for large scale **3D point cloud**
- Contributed to an efficient **exporting pipeline** for a multi-view RGB-D recordings from **Matroska format**

Industry Engagements

Itestra GmbH — Munich, Germany
CODING CAMP · 1 W. (Mar '22 -- Mar '22)
Android App Development · Custom Object Detection (2D) · Model Deployment · TensorFlow · Java, Python
- **Developed Android app** to **detect** and measure distances between **golf balls** and putting holes within augmented reality
- **Deployed** a **deep learning model** for **golf ball** and putting hole **detection**

LAIX Inc. (LiuLiShuo) — Shanghai, China
SOFTWARE ENGINEERING INTERN · 3 M. (Jun '19 -- Sep '19)
Communication · Problem-Solving · Praat, Python
- Evaluated audio and text data for English pronunciation and grammar
- Implemented **Python** and **Praat scripts** to **enhance workflow efficiency**

Awards & Achievements

2024   *German Society for Digital Medicine's* **Bachelor's Thesis Award,** Outstanding Bachelor's Thesis in the field of "Digital Medicine"

2023   **Germany's National Scholarship Program,** Merit-based scholarship program (top 1%)

2022   **Germany's National Scholarship Program,** Merit-based scholarship program (top 1%)

Teaching

Technical University Munich (TUM) — Munich, Germany
TUTOR - BASIC PRINCIPLES: OPERATING SYSTEMS AND SYSTEM SOFTWARE · 6 M. (Nov '21 -- Apr '22)
- Teaching exercise classes about operating systems and system software and grading of assignments and exams

Technical University Munich (TUM) — Munich, Germany
TUTOR - REVISION COURSE COMPUTER NETWORKING AND DISTRIBUTED SYSTEMS · 1 M. (Oct '21 -- Nov '21)
- Organizing and teaching a revision course about computer networks and distributed systems

Technical University Munich (TUM) — Munich, Germany
TUTOR - PREPATORY MATH COURSE · 1 M. (Oct '21 -- Nov '21)
- Teaching an introductory course about mathematics and programming to freshmen

Technical University Munich (TUM) — Munich, Germany
TUTOR - FUNDAMENTALS OF ALGORITHMS AND DATA STRUCTURES · 6 M. (Apr '21 -- Oct '21)
- Teaching exercise classes about algorithm and data-structures and grading of assignments and exams

Technical University Munich (TUM) — Munich, Germany
TUTOR - FUNDAMENTALS OF PROGRAMMING · 6 M. (Oct '20 -- Apr '21)
- Teaching exercise classes about programming fun in Java and grading of assignments and exams

Quotes

"Where should I put in my CV that I have **permanent German residence***, and that* **German** *is my* **mother tongue***, my* **English is C2** *level and my* **Chinese is C1** *level?"*

- Tony