

# YUXUAN XUE

Maria-von-Linden str. 6, 72076, Tuebingen, Germany

| +49 0176-6304-1003

| yuxuan.xue@uni-tuebingen.de

## SUMMARY

- Interdisciplinary Ph.D. student with knowledge and experience in **computer vision** and **machine learning**
- Interested in computer graphics, gen AI, human reconstruction and understanding
- Personal Website: <https://yuxuan-xue.com>

## AWARD

- **Best student paper award** at BMVC 2022
- **Ph.D. Scholarship** of the International Max Planck Research School for Intelligent System (**IMPRS-IS**)
- Research gift of **\$5000** from **OpenAI Research Access Program**

## PUBLICATION

- **Human 3Diffusion: Realistic Avatar Creation via Explicit 3D Consistent Diffusion Models**
  - [Yuxuan Xue](#), Xianghui Xie, Riccardo Marin, Gerard Pons-Moll
  - presented at NeurIPS 2024 in Vancouver
  - <https://yuxuan-xue.com/human-3diffusion/>
- **Event-Based Non-rigid Reconstruction of Low-Rank Parametrized Deformations from Contours**
  - [Yuxuan Xue](#), Haolong Li, Stefan Leutenegger, Jörg Stückler
  - published at International Journal of Computer Vision, Volume 132, pages 2943–2961, (2024)
- **NSF: Neural Surface Fields for Human Modeling from Monocular Depth**
  - [Yuxuan Xue](#), Bharat Lal Bhatnagar, Riccardo Marin, Nikos Saraftanos, Yunlu Xu, Gerard Pons-Moll, Tony Tung
  - presented at ICCV 2023 in Paris
  - <https://yuxuan-xue.com/nsf/>
- **Parameter-Efficient Orthogonal Finetuning via Butterfly Factorization**
  - Weiyang Liu\*, Zeju Qiu\*, [Yuxuan Xue](#)\*\* , Yao Feng\*\* , Yuliang Xiu\*\* , Longhui Yu\*\* , Haiwen Feng, Zhen Liu, Juyeon Heo, Songyou Peng, Yandong Wen, Michael J. Black,, Adrian Weller, Bernhard Schölkopf.
  - presented at ICLR 2024 in Vienna
- **Controlling Text-to-Image Diffusion by Orthogonal Finetuning**
  - Zeju Qiu\*, Weiyang Liu\*, Haiwen Feng, [Yuxuan Xue](#), Yao Feng, Zhen Liu, Dan Zhang, Adrian Weller, Bernhard Schölkopf
  - presented at NeurIPS 2023 in New Orleans
- **Event-based Non-Rigid Reconstruction from Contours**
  - [Yuxuan Xue](#), Haolong Li, Stefan Leutenegger, Jörg Stückler
  - **Oral** presentation at BMVC 2022, London
  - **Best student paper award**
  - <https://sites.google.com/view/event-based-contour-recon/startseite>
- **Robust Event Detection based on Spatio-Temporal Latent Action Unit using Skeletal Information**
  - Hao Xing, [Yuxuan Xue](#), Mingchuan Zhou, Darius Burschka
  - presented at IROS 2021, Prague

## EDUCATION

### IMPRS-IS & University of Tübingen

Computer Science, Ph.D.

Tübingen

Jul 2022 to present

- Supervised by Prof. Dr. Gerard Pons-Moll, Advised by Dr. Michael Black and Prof. Dr. Hendrick Lensch
- Focus on 3D/4D Human Modelling as well as Human Behaviour Understanding

### Technical University of Munich

Computer Science major in Robotics, M.Sc

Munich

Apr 2020 to Jun 2022

- Major in Vision-based Navigation and Multi-view Geometry by Prof.Cremers
- Guided Research: Advanced Topics in 3D Computer Vision by Prof.Navab

### Technical University of Munich

Mechanical Engineering, M.Sc

Munich

Sept 2019 to Jun 2022

- Major in Modern Control Theory and Multidisciplinary Design Optimization
- Semester Thesis: Learning Human-Object Interaction for Humanoid Robot Using Graph Neural Network

### Technical University of Munich

Mechanical Engineering, B.Sc

Munich

Sept 2016 to Dec 2019

- Bachelor thesis: High Precision Lane Following method for Robot, developed lane detection and following algorithm
- Courses: Control Theory, Computer-Assisted Control Design, Embedded Systems and Robots

## RESEARCH EXPERIENCE

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### Event-based Non-rigid Object Tracking

Master thesis student

MPI-IS in Tübingen

Aug 2021 to Jun 2022

- Developed a event simulator which is able to generate standard image, depth image, optical flow, and asynchronous events stream from deforming objects
- Developed a novel algorithm which tracks deformable objects tracking from events stream asynchronously

### Dynamic Visual Inertial Odometry

Research assistant

MPI-IS in Tübingen

Apr 2021 to Jun 2022

- Developed monocular and stereo event-based visual inertial odometry with additional depth measurement
- Developed an IMU-enhanced KLT tracker for the VIO system
- Temporal and Extrinsic calibration between event camera and RGB-D camera

### Depth Image Reconstruction from Time-of-Flight Sensor

Student researcher

CAMPAR at TUM

Apr 2021 to Aug 2021

- Developed a semi-self-supervised Neural Network to reconstruct high-quality depth image from 4-phase ToF raw measurement
- Implemented State-of-the-Art algorithms such as Attention, 3D Convolution, the Network outperforms other existing works

### Vision-based Navigation: Rotation-only Odometry

Student researcher

Computer Vision Group at TUM

Nov 2020 to Feb 2021

- Developed an ORB-based Visual Odometry system using rotation averaging and translation averaging. Our system outperforms classical Visual Odometry in pure rotation motion
- Implemented camera calibration, feature detection and matching, pose estimation, place recognition, point triangulation, and Bundle Adjustment in C++

### Learning Human-object-interaction for service robots

Research assistant

MSRM at TUM

Oct 2020 to Jun 2021

- Developed object and human pose tracking to identify the pose of hand and objects using deep learning based method
- Carried out experiments and analyzed results of the human falling detection work
- Work accepted in IROS 2021: *Robust Event Detection Based on Spatio-Temporal Latent Action Unit using Skeletal Information*

## TEACHING EXPERIENCE

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- **Instructor**, Connecting Human Motion with Language and Visual using Foundation Models, Summer semester 2024
- **Teaching Assistant**, Practical Informatics II, Summer semester 2024
- **Instructor**, Human-Object-Interaction Animation in Blender, Summer semester 2023
- **Teaching Assistant**, Digital Human, Winter semester 2022/2023, 2024/2025
- **Tutorium**, Control Theory, Summer semester 2019
- **Tutorium**, Thermodynamics, Winter semester 2018/19

## PROFESSIONAL EXPERIENCE

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### Siemens AG

Working Student in finance lab

Munich

Apr 2020 to Mar 2021

- Supported the team to implement project strategy, conducted technical researches and created presentations
- Developed a database (MSSQL) and an access app for PO team (over 20 people) and deployed on SharePoint server

### BMW AG

Intern in interior design

Munich

Mar 2019 to Aug 2019

- Analysed interior 3D models in CATIA V5: created exploded view of components; measured collision between components
- Updated construction guidelines: summarized discussion result in the design meeting and updated the construction guidelines

## PROJECT EXPERIENCE

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### High Precision Lane Following method for Robot

Development of controller

FTM at TUM

May 2019 to Nov 2019

- Developed a lane following algorithm based on detected lane of Computer Vision group
- Researched literature of existing algorithm, developed new algorithm because of the high demand of precision
- Implemented algorithm in ROS node and tested on Audi Q7 at the automotive technology lab at TUM

### Medical Augmented Reality: Shared Annotation for Remote Guidance

Computer Vision engineer

CAMPAR at TUM

Dec 2020 to Feb 2021

- Developed a 3D object reconstruction using RGB-D Camera and 3D annotating method using camera unprojection model
- Deployed the project on IOS Device using Swift and Objective-C, and developed a modern User Interface

## OTHER SKILLS

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**IT Skills** MS Windows, MS Office, Linux(Ubuntu), and CAD (Inventor, SolidWorks, CATIA)

Proficient in Python (5 yrs); C/C++; experiences with scikit-learn and pandas, PyTorch, Robot Operating System, Git

**Languages** English: professional proficiency. Mandarin: native. German: professional proficiency.