

Liming Kuang

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Education

Technische Universität München <i>PhD in Informatics Professorship of Photogrammetry and Remote Sensing</i>	Mar. 2026 – Present Munich, Germany
Technische Universität München <i>M.Sc. Informatics</i>	Apr. 2023 – Feb. 2026 Munich, Germany
Technische Universität München <i>B.Sc. Informatics</i>	Apr. 2019 – Feb. 2023 Munich, Germany
Goethe-Universität Frankfurt <i>B.Sc. Informatics</i>	Mar. 2018 – Mar. 2019 Frankfurt am Main, Germany

Research Experience

Professorship of Photogrammetry and Remote Sensing (TUM) <i>PhD Student</i> <ul style="list-style-type: none">• Topic: Active Pose-Free 3D Reconstruction with Dynamic Distractors• Supervisor: Prof. Dr. Benjamin Busam	Mar. 2026 – Present Munich, Germany
Chair for Computer Aided Medical Procedures (TUM) <i>Master Thesis(1.0)</i> <ul style="list-style-type: none">• Topic: Utilizing Emergent Capabilities of VLMs for 6D Object Pose Estimation	Nov. 2024 – Feb. 2026 Munich, Germany
<i>Research Projects (Jointly with the Professorship of Photogrammetry and Remote Sensing)</i> <ul style="list-style-type: none">• Topic 1: Novel real-time sparse feature matcher with spatial memory• Topic 2: Learning Generalized Continuous Space-Time Scene Dynamics with Neural ODE-based NeRFs• Topic 3: Learning Continuous 4D Motion for Decoupled Shape Deformation• Supervisor: Prof. Dr. Nassir Navab, Prof. Dr. Benjamin Busam• Advisor: Yordanka Velikova, Mahdi Saleh	Munich, Germany
Chair for Computer Aided Medical Procedures & The Hamlyn Centre <i>Guided Research (1.0)</i> <ul style="list-style-type: none">• Topic: 3D aorta reconstruction and real-time catheter tracking system with a KUKA.	Oct. 2023 – Oct. 2024 London, UK
<i>Interdisciplinary Project (1.6)</i> <ul style="list-style-type: none">• Topic: Unsupervised motion segmentation using optical flow in ultrasound. [2]• Supervisor: Prof. Dr. Nassir Navab (TUM), Prof. Dr. Rodriguez y Baena (ICL)• Advisor: Yordanka Velikova, Alex T.J. Ranne	Munich, Germany
Chair of Network Architectures and Services (TUM) <i>Bachelor's Thesis: IPv6 Target Generation (1.3)</i> <ul style="list-style-type: none">• Topic: Evaluation of IPv6 target generation algorithms using machine learning methods. [3]• Supervisor: Prof. Dr.-Ing. Georg Carle• Advisor: Lion Steger, Max Helm, Dr. Johannes Zirngibl	Oct. 2022 - Mar. 2023 Munich, Germany

Publications

- 1. ConceptPose: Training and Model-Free Object Pose Estimation using Concept Vectors**
Liming Kuang, Dani Velikova, Mahdi Saleh, Jan-Nico Zaeche, Danda Pani Paudel, Benjamin Busam
2026 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
We introduce a training-free and model-free framework for one-shot 6D object pose estimation that leverages VLMs to create 3D concept maps and establish robust 3D-3D correspondences, achieving state-of-the-art results on common benchmarks without any object or dataset-specific training.
- 2. Node-RF: Learning Generalized Continuous Space-Time Scene Dynamics with Neural ODE-based NeRFs**
Hiran Sarkar, **Liming Kuang**, Dani Velikova, Benjamin Busam
2026 IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)
We integrate Neural Ordinary Differential Equations with dynamic Neural Radiance Fields to enable continuous-time, spatiotemporal scene representation that generalizes beyond observed trajectories, allowing long-range extrapolation of scene dynamics at constant memory cost.
- 3. CathFlow: Self-Supervised Segmentation of Catheters in Interventional Ultrasound Using Optical Flow and Transformers**
Alex T.J. Ranne*, **Liming Kuang***, Yordanka Velikova*, Nassir Navab, Ferdinando Rodriguez y Baena
2024 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
We introduced a self-supervised deep learning architecture with Transformers for segmenting and tracking catheters in transversal ultrasound images without labelled data, leveraging physics-driven simulations and a novel CT-Ultrasound common domain.
- 4. Target Acquired? Evaluating Target Generation Algorithms for IPv6**
Lion Steger, **Liming Kuang**, Johannes Zirngibl, Georg Carle, Oliver Gasser
2023 7th Network Traffic Measurement and Analysis Conference (TMA), 1-10 (**Best Paper Award**)
We demonstrated the need to tailor IPv6 hitlists to research goals, classify addresses into six categories, and evaluated the performance of different Target Generation Algorithms, highlighting significant variations in the responsiveness of generated addresses across TGAs and conditions.

Awards & Honors

TUM-ICL Global Incentive Fund Recipient

Visiting Researcher at Imperial College London

2024

MCML Travel Grant Recipient

Sponsored Travel to IROS 2024

2024

Skills

Programming:

- Proficient in Python; Working knowledge of C++, Linux shell scripting.
- Extensive experience with tools including PyTorch, ROS, Git and Conda.
- Experience with ImFusion Suite for medical image processing.
- Experience with novel reconstruction methods including 3DGS, NeRF, VGGT.

Languages: Chinese (native), English (fluent), German (advanced)

Additional Skills & Hobbies :

- Semi-professional photographer: Instagram @_steven_kuang_
- Passionate home barista since 2022.