Yitong Li

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EDUCATION

Technical University of Munich (TUM) — Munich, Germany
Doctoral Researcher - PhD student — Sep. 2023 – Present
Supervised by Prof. Christian Wachinger at the Lab for Artificial Intelligence in Medical Imaging. Research focuses on medical image analysis, encompassing areas of generative models, self-supervised learning, and multi-modal learning.

Technical University of Munich (TUM) — Munich, Germany
Master of Biomedical Computing; Grade: 1.4 (Graduate with Distinction) — Oct. 2020 – Mar. 2023
Main Courses: Machine Learning for Graphs and Sequential Data, Machine Learning for 3D Geometry, Computer Aided Medical Procedures, Machine Learning in Medical Imaging, Biomedical Physics, Basic Mathematical Methods for Imaging and Visualization.

Exchange Program in Informatics — Aug. 2018 – Mar. 2019
Courses: Shape Analysis and Optimization, Introduction to Deep Learning, Robotics, Sensor-based Robot Manipulation & Locomotion, Multi-rate Signal Processing.

Southeast University (SEU) — Nanjing, China
Bachelor of Robot Engineering; GPA: 3.89 / 4.0, Rank: 2 / 28 — Aug. 2016 – Jul. 2020
Main Courses: Fundamentals of Data Structures, C++ Programming, Numerical Computing, Probability & Mathematical Statistics, Artificial Intelligence, Digital & Logic Design, Real-time Operating System, Intelligent Robotic Systems, Machine Intelligence & Robotics. Graduated with the honor of **'Excellent Bachelor Graduate'**.

University of British Columbia (UBC) — Vancouver, Canada
Summer School Program in Electrical & Computer Engineering — Jul. 2018 – Aug. 2018
Courses: Introduction to Digital Technology and Smart Devices, Introduction to Electric Circuits, Sensors, and Power.

PUBLICATIONS

[1] **Yitong Li***, Tom Nuno Wolf*, Sebastian Pölsterl, Igor Yakushev, Dennis M Hedderich, Christian Wachinger. **From Barlow Twins to Triplet Training: Differentiating Dementia with Limited Data**. Medical Imaging with Deep Learning (MIDL), 2024. ** Equal contribution*

[2] HyunJun Jung, Patrick Ruhkamp, Guangyao Zhai, Nikolas Brasch, **Yitong Li**, Yannick Verdie, Jifei Song, Yiren Zhou, Anil Armagan, Slobodan Ilic, Ales Leonardis, Nassir Navab, Benjamin Busam. **On the Importance of Accurate Geometry Priors for Dense 3D Vision Tasks**. IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2023.

[3] Daoyi Gao*, **Yitong Li***, Patrick Ruhkamp*, Iuliia Skobleva*, Magdalena Wysock*, HyunJun Jung, Pengyuan Wang, Arturo Guridi, Nassir Navab, Benjamin Busam. **Polarimetric Pose Prediction**. European Conference on Computer Vision (ECCV), 2022. ** Equal contribution*

[4] Pengyuan Wang, HyunJun Jung, **Yitong Li**, Siyuan Shen, Rahul Parthasarathy Srikanth, Lorenzo Garattoni, Sven Meier, Nassir Navab, Benjamin Busam. **PhoCaL: A Multi-Modal Dataset for Category-Level Object Pose Estimation with Photometrically Challenging Objects**. IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), 2022.

[5] Atad Matan*, Vitalii Dmytrenko*, **Yitong Li***, Xinyue Zhang*, Matthias Keicher, Jan Stefan Kirschke, Benedikt Wiestler, Ashkan Khakzar and Nassir Navab. **CheXplaining in Style: Counterfactual Explanations for Chest X-rays using StyleGAN**. ICML 2022 Interpretable Machine Learning in Healthcare (IMLH) Workshop, 2022. ** Equal contribution*

[6] Xin Xu, Kun Qian, Bo Zhou, Shenghao Chen, **Yitong Li**. **Two-stream 2D/3D Residual Networks for Learning Robot Manipulations from Human Demonstration Videos**. IEEE International Conference on Robotics and Automation (ICRA), 2021.

EXPERIENCE

Scientific Researcher (full-time) — Munich, Germany
Ludwig Maximilian University of Munich (LMU) Klinikum — Apr. 2023 – Sep. 2023
- **AI in Medical Imaging**: Work as a scientific researcher in the Lab for Artificial Intelligence in Medical Imaging.

Research Assistant for Medical Data Processing — Munich, Germany
Department of Radiology in Ludwig Maximilian University of Munich (LMU) — Nov. 2021 – Mar. 2022
- **Brain data processing**: Processing brain data of people suffering from Glioma, Schizophrenia, and other brain diseases, correlation analysis of brain fMRI data, processing pipeline optimization.

Research Assistant for 3D Computer Vision — Munich, Germany
Chair of Computer Aided Medical Procedures in Technical University of Munich (TUM) — Jun. 2021 – Jun. 2022
- **6D object pose estimation**: Attaining poses of photometrically challenging household objects, implementing scene acquisition and semi-automatic pose annotation using the robot.
- **3D reconstruction**: Implementation of a tracking system for camera-based 3D reconstructions of indoor surgical rooms. Calibration of all tracking systems and tracking data in environments with different complexity and lighting conditions.

Working Student for Machine Learning Applications — Munich, Germany
PreciTaste (PreciBake) GmbH — Sep. 2022 – Dec. 2022

- **Object detection**: Implementing machine learning algorithms for food product detection. Developing object-oriented programs for food status monitoring and prediction.

- **Algorithm Engineer Intern** — Nanjing, China
  Artificial Intelligent Chip Research in Institute of Automation, Chinese Academy of Sciences — *Jul. 2020 – Nov. 2020*
    - **Object detection**: Applying lightweight neural networks (tiny-Yolov3, CenterNet) for object detection in portable devices.

- **Research Intern** — Gainesville, USA
  Lab of Power Electronics and Electrical Power Research in University of Florida (UF) — *Jul. 2019 – Aug. 2019*
    - **Control system design**: Research intern in the lab led by Prof. Shuo Wang, applying a control system in a converter and completing the design of a closed-loop boost converter for stability improvement.

PROJECTS

- **MRI-based Differential Diagnosis of Dementia with Deep Learning (Master Thesis)**
  Lab for Artificial Intelligence in Medical Imaging (AI-Med), TUM — *Jun. 2022 – Feb. 2023*
  Differential diagnosis of two types of dementia - Alzheimer's and Frontotemporal Dementia, using self-/semi-supervised methods with transfer learning, with brain 3D MRI scans as input.

- **CheXplaining in Style**
  Chair of Computer Aided Medical Procedures, TUM — *Sep. 2021 – Mar. 2022*
  Interpreting classifiers trained on Chest X-rays via counterfactual explanation. Using a StyleGAN-based methodology to capture human-interpretable X-ray features via disentangled representations in the latent space.

- **Whole-Heart Mesh Reconstruction from Medical Images**
  Virtonomy GmbH, Munich — *Sep. 2021 – Mar. 2022*
  Implementing a graph convolutional neural network to directly reconstruct whole heart meshes from input medical images (CT, MRI).

- **Polarimetric Pose Prediction**
  Chair of Computer Aided Medical Procedures, TUM — *Apr. 2021 – Nov. 2021*
  Implementing a hybrid model that utilizes polarimetric information as physical priors in a data-driven learning strategy, to improve the accuracy of 6D pose estimation for photometrically challenging objects.

- **Robots Learning from Demonstration based on Video Caption (Bachelor Thesis)**
  School of Automation, SEU — *Oct. 2019 – Jun. 2020*
  Implementing LSTM-based video captioning to translate videos into robot manipulation commands, followed by AngleNet to enable robots to perform grasping and placing tasks based on human activity observations.

HONORS AND AWARDS

- Excellent Bachelor Graduate of Southeast University – Jul. 2020
- Third Prize of Vision-Guided Robot Competition in Southeast University – Jun. 2018
- Second Prize of Mathematical Contest in Modeling in Southeast University – May. 2018
- National Scholarship Winner – Oct. 2017

EXTRACURRICULAR ACTIVITIES

- Participant of the Hackathon: Reproduce CVPR at Friedrich-Alexander-Universität Nürnberg (FAU) – Dec. 2023
- Participant of the TUM ATHENS program in UPM: Engineering Open-source Medical Devices – Mar. 2023
- Participant of Ferienakademie Sarntal 2021: Computational Medical Imaging in South Tyrol, Italy – Sep. 2021
- Volunteer of the Second Nanjing Youth International Science Expo – Sep. 2019
- Vice Minister of Student Life Department in the Student Union of Southeast University – Aug. 2017 – Aug. 2018
- Minister of Organization Department in the Tennis Association of Southeast University – Aug. 2017 – Aug. 2018

SKILLS & INTERESTS

- **Computer Skills**: Python, C/C++, R, Matlab, Pytorch, Scikit, Pandas, TensorFlow, Docker, GIT, ROS, Linux
- **Languages**: English (Fluent), Chinese (Native), German (Intermediate), Portuguese (Basic)
- **Interests**: Literature, Painting, Sports, Trekking, Photography, Piano
- **Research Interests**: AI/ML in Medicine, Explainable AI, Self- & Semi-supervised Learning, Multi-modal Learning