

Yumeng Li

RESEARCH SCIENTIST · PASSIONATE ABOUT GENERATIVE AI

Freiburg im Breisgau, Germany

✉ liyumeng07@outlook.com | 🏠 yumengli007.github.io | 🌐 YumengLi007 | 📧 Yumeng Li | 📄 yumeng-li-007 | 🐦 @YumengLi_007

Education

University of Mannheim

Ph.D. in Computer Science

Mannheim, Germany

01/2022 – 02/2025

- Focus on Generative Models (e.g., GAN & Diffusion Model), Vision-Language Models and Out-of-Distribution Generalization
- Advisors: Prof. Margret Keuper, Dr. Dan Zhang (Bosch Center for AI) and Dr. Anna Khoreva (Bosch Center for AI)

RWTH Aachen University

M.Sc. in Simulation Sciences

Aachen, Germany

10/2019 – 11/2021

- GPA: 1.3/1.0 (1.0 is the best)
- Thesis: Information Aggregation for 6D Pose Estimation (Done at Bosch Center for AI)
Focus on cross-category level 6D pose estimation based on RGB-D image. By leveraging meta-learning, i.e., Neural Processes, and Graph Neural Networks (GNNs), to improve generalization on unseen novel objects

Beijing Institute of Technology (BIT)

B.Sc. in Vehicle Engineering

Beijing, China

10/2015 – 08/2019

- GPA: 90.5/100 (Top 1 of the major)
- Joined the student exchange program at RWTH Aachen University (10/2018 – 08/2019)
- Thesis: Bayesian Optimization Approach for Stochastic Pedestrian Collision Avoidance in a MPC-based Trajectory Planning (Done at RWTH Aachen University during the exchange)

Research Experience

Black Forest Labs

Member of Technical Staff

Freiburg, Germany

05/2026 - Present

- Research on visual foundation models.

Amazon

Applied Scientist

Barcelona, Spain

11/2024 - 01/2026

- Researched and implemented image and video generation approaches across diverse domains.
- Designed and deployed CGI-based photorealistic rendering workflows for scalable data generation.
- Developed novel foreground-conditioned inpainting algorithms, preserving high object fidelity.

Bosch Center for Artificial Intelligence

Doctoral Researcher

Renningen, Germany

01/2022 - 10/2024

- Developed new algorithms of Generative Modeling, i.e., GANs and Diffusion Models, for image & video synthesis.
- Investigated synthetic data augmentation for real-world applications, e.g., autonomous driving.
- Improved out-of-distribution generalization of semantic segmentation models.

The Laboratory for Machine Tools and Production Engineering (WZL), RWTH Aachen

Student Research Assistant

Aachen, Germany

12/2019 – 05/2020

- Implemented the reinforcement learning algorithm, e.g., dynamic movement primitive (DMP) using Python and TensorFlow.
- Developed DMP-based trajectory learning software, and simulated in ROS MoveIt and Gazebo.

Production Engineering of E-Mobility (PEM), RWTH Aachen

Student Research Assistant

Aachen, Germany

03/2019 – 08/2019

- Developed Model Predictive Control based trajectory planner with collision cone approach, to avoid collision with stochastic obstacles.
- Employed Bayesian Optimization for hyperparameter tuning in the trajectory planner.
- Implemented Unscented Kalman Filter for noisy data filtering.

Publications

- 1 MOSAICMEM: HYBRID SPATIAL MEMORY FOR CONTROLLABLE VIDEO WORLD MODELS 2026
*Wei Yu**, *Runjia Qian**, **Yumeng Li***, *Liquan Wang*, *Songheng Yin*, *Dennis Anthony*, *Yang Ye*, *Yidi Li*, *Weiwei Wan*, *Animesh Garg* arXiv Preprint
- 2 PLACID: IDENTITY-PRESERVING MULTI-OBJECT COMPOSITING VIA VIDEO DIFFUSION WITH SYNTHETIC TRAJECTORIES 2026
Gemma Canet Tarrés, *Manel Baradad*, *Francesc Moreno-Noguer*, **Yumeng Li** CVPR
- 3 VSTAR: GENERATIVE TEMPORAL NURSING FOR LONGER DYNAMIC VIDEO SYNTHESIS 2025
Yumeng Li, *William Beluch*, *Margret Keuper*, *Dan Zhang*, *Anna Khoreva* ICLR
- 4 LABEL-FREE NEURAL SEMANTIC IMAGE SYNTHESIS 2024
Jiayi Wang, *Kevin A. Laube*, **Yumeng Li**, *Jan H. Metzen*, *Shin-I Cheng*, *Julio Borges*, *Anna Khoreva* ECCV
- 5 ADVERSARIAL SUPERVISION MAKES LAYOUT-TO-IMAGE DIFFUSION MODELS THRIVE 2024
Yumeng Li, *Margret Keuper*, *Dan Zhang*, *Anna Khoreva* ICLR
- 6 DOMAIN-AWARE FINE-TUNING OF FOUNDATION MODELS 2024
Ugur Ali Kaplan, *Margret Keuper*, *Anna Khoreva*, *Dan Zhang*, **Yumeng Li** ICML Workshop
- 7 DIVIDE & BIND YOUR ATTENTION FOR IMPROVED GENERATIVE SEMANTIC NURSING 2023
Yumeng Li, *Margret Keuper*, *Dan Zhang*, *Anna Khoreva* BMVC (Oral)
- 8 ANOMALY-AWARE SEMANTIC SEGMENTATION VIA STYLE-ALIGNED OOD AUGMENTATION 2023
Dan Zhang, *Kaspar Sakmann*, *William Beluch*, *Robin Hutmacher*, **Yumeng Li** ICCV Workshop
- 9 INTRA- & EXTRA-SOURCE EXEMPLAR-BASED STYLE SYNTHESIS FOR IMPROVED DOMAIN GENERALIZATION 2023
Yumeng Li, *Dan Zhang*, *Margret Keuper*, *Anna Khoreva* IJCV
- 10 INTRA-SOURCE STYLE AUGMENTATION FOR IMPROVED DOMAIN GENERALIZATION 2023
Yumeng Li, *Dan Zhang*, *Margret Keuper*, *Anna Khoreva* WACV
- 11 CATEGORY-AGNOSTIC 6D POSE ESTIMATION WITH CONDITIONAL NEURAL PROCESSES 2022
Yumeng Li*, *Ning Gao**, *Hanna Ziesche*, *Gerhard Neumann* CVPR Workshop

Patents

- METHOD AND DEVICE FOR GENERATING SYNTHETIC VIDEO DATA FROM A TEXT PROMPT 2025
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- DEVICE AND METHOD OF SYNTHETIC IMAGE GENERATION 2025
Anna Khoreva, *Dan Zhang*, *Jiayi Wang*, **Yumeng Li** US Patent
- TECHNIQUE FOR EXTRACTING FEATURES OF AN ENVIRONMENT FROM IMAGE DATA 2025
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- TRANSFERRING KNOWLEDGE FROM A TEACHER NEURAL NETWORK TO A STUDENT NEURAL NETWORK 2025
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- DEVICE AND COMPUTER-IMPLEMENTED METHODS FOR MACHINE LEARNING, FOR PROVIDING A MACHINE LEARNING SYSTEM, OR FOR OPERATING A TECHNICAL SYSTEM 2025
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- DEVICE AND METHOD FOR GENERATING IMAGES 2025
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- DEVICE AND COMPUTER IMPLEMENTED METHOD FOR MACHINE LEARNING 2024
Massimo Bini, **Yumeng Li**, *Anna Khoreva* US Patent
- DETERMINING WHETHER A GIVEN INPUT RECORD OF MEASUREMENT DATA IS COVERED BY THE TRAINING OF A TRAINED MACHINE LEARNING MODEL 2024
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent
- MEASURING THE GENERALIZATION ABILITY OF A TRAINED MACHINE LEARNING MODEL WITH RESPECT TO GIVEN MEASUREMENT DATA 2024
Yumeng Li, *Anna Khoreva*, *Dan Zhang* US Patent

- METHOD OF AND APPARATUS FOR PROCESSING DIGITAL IMAGE DATA 2024
Yumeng Li, Anna Khoreva, Dan Zhang US Patent
- DEVICE AND METHOD FOR DETERMINING AN ENCODER CONFIGURED IMAGE ANALYSIS 2024
Yumeng Li, Anna Khoreva, Dan Zhang US Patent
- METHOD FOR ASCERTAINING A 6D POSE OF AN OBJECT 2023
Ning Gao, Yumeng Li, Hanna Ziesche, Gerhard Neumann US Patent

Skills

Software Engineering Language Python, PyTorch, Git, LSF & SLURM, C/C++, Matlab, ROS, C#
Chinese (Native), English (Fluent), German (Intermediate)

Honors & Awards

2020	Germany Scholarship	<i>Aachen, Germany</i>
2019	Outstanding Graduate of Beijing , Beijing Municipal Education Commission	<i>Beijing, China</i>
2016 & 2018	National Scholarship (Top 2%) , Ministry of Education of the People's Republic of China	<i>Beijing, China</i>
2018	Innovation Scholarship (Top 1%) , Ministry of Industry and Information Technology of China	<i>Beijing, China</i>

Miscellaneous

Reviewer: ICML, BMVC, CVPR, ECCV, Computer Vision and Image Understanding (Journal), IEEE Transactions on Pattern Analysis and Machine Intelligence (Journal)

Teaching & Supervision:

- Student Supervision: Uğur Ali Kaplan, Volodymyr Havrylov
- Seminar CS717: Computer Vision Seminar - AI Safety & Robustness (Winter Term 2024)
- Seminar: Large-scale Generative Models: Prospects and Limitations (Summer Term 2023)
- Seminar Computer Vision: Recent Advances in Generative Models (Winter Term 2022)

Activity: International Computer Vision Summer School 2024