Chenguang Huang

University of Technology Nuremberg, Artificial Intelligence and Robotics Lab Department of Computer Science & Artificial Intelligence Ulmenstrasse 52i, 90461, Nuremberg, Germany

Muangchenguang2018@gmail.com | Rersonal Website | 🖓 GitHub | 🛞 Google Scholar | in LinkedIn

Technical Expertise

- Open-Vocabulary Mapping
- 3D Scene Graphs
- Vision and Language Navigation
- Foundation Models for Manipulation and Navigation

Education

Ph.D. in Computer Science	Freiburg, Germany
University of Freiburg	2021 - Now
Supervisor: Prof. Dr. Wolfram Burgard	
Msc in Robotics, Cognition, Intelligence	Munich, Germany
Technical University of Munich – Grade: 1.3 (Excellent)	2018 - 2021
Thesis: Visual-LiDAR Instance-Level Mapping	
Supervisor: Prof. Dr. Federico Tombari	
Swiss European Mobility Program (Exchange Semesters)	Zurich. Switzerland
Eidgenössische Technische Hochschule Zürich (ETHZ)	2020 - 2021
Semester Thesis: Pose-Graph-Based Visual-LiDAR Mapping	
Supervisor: Prof. Dr. Margarita Chli	
Bsc in Vehicle Engineering	lilin. China
Jilin University – Grade: 3.86/4.0 (rank 1st in the major, 1/47)	2014 - 2018
Thesis: Planetary Gear Reducer for Electric Formula Racing Cars	
Supervisor: Prof. Dr. Wang, Da	
Mark Experience	
work Experience	
Scientific Research Staff	Nuremberg, Germany
University of Technology Nuremberg, Department of Computer Science & Artificial Intelligence, Artificial Intelligence and Robotics Lab	02/2025 - Now
Scientific Research Staff	Freiburg, Germany
University of Freiburg, Department of Computer Science, Autonomous Intelligent Systems Lab	10/2021 – 12/2024
Student Research Intern	Munich, Germany
Technical University of Munich, Engineering Risk Analysis Group	04/2020 – 09/2020
Develop pipelines for 3D object detections from LiDAR and camera on different datasets like KITTI, Waymo and A2D2	
Student Research Intern	Munich, Germany
Technical University of Munich, Munich Institute of Robotics and Machine Intelligence (MIRMI)	04/2020 – 09/2020
Develop control interface for applying reinforcement learning algorithms both in simulation and on real robot for Franka Pane	da
Student Intern	Munich, Germany
Siemens Mobility	03/2019 – 06/2019
 Develop automatic pipeline for software testing using GitLab-CI and AWS 	
Teaching Experience	
Introduction to Mobile Robotics TA	Freihura Germany

Introduction to Mobile Robotics TA University of Freiburg

Robot Mapping TA University of Freiburg SS 2022, SS 2023

Freiburg, Germany WS 2022/2023

AWARDS Yokohama, Japan 2024 Best Conference Paper Award, IEEE International Conference on Robotics and Automation 2015 First Prize for the 8th "Gaojiao Cup" National College Students Advanced Mapping Technology and Yunnan, China Product Information Modeling Innovation Competition **SCHOLARSHIPS** 2017 National Scholarship of China, Ministry of Education of the People's Republic of China Jilin, China 2016 National Scholarship of China, Ministry of Education of the People's Republic of China Jilin, China 2015 National Scholarship of China, Ministry of Education of the People's Republic of China Jilin, China 2015 "Liming" Talents Scholarship, Jilin University Jilin, China

Publications

Peer-Reviewed Journal Articles

- BYE: Build Your Encoder with One Sequence of Exploration Data for Long-Term Dynamic Scene Understanding Chenguang Huang, Shengchao Yan, and Wolfram Burgard IEEE Robotics and Automation Letters (RA-L), 2025
- Multimodal Spatial Language Maps for Robot Navigation and Manipulation Chenguang Huang, Oier Mees, Andy Zeng, and Wolfram Burgard International Journal of Robotics Research (JJRR), 2025

Peer-Reviewed Conference Articles

- Hierarchical Open-Vocabulary 3D Scene Graphs for Language-Grounded Robot Navigation Abdelrhman Werby*, Chenguang Huang*, Martin Büchner*, Abhinav Valada, and Wolfram Burgard (*Equal Contribution) Robotics: Science and Systems (RSS), Delft, Netherlands, 2024
- Open X-Embodiment: Robotic Learning Datasets and RT-X Models
 Open X-Embodiment Collaboration
 Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), Yokohama, Japan, 2024
- Audio Visual Language Maps for Robot Navigation
 Chenguang Huang, Oier Mees, Andy Zeng, and Wolfram Burgard
 Proceeding of the 18th International Symposium on Experimental Robotics (ISER), Chiang Mai, Thailand, 2023
- Visual Language Maps for Robot Navigation Chenguang Huang, Oier Mees, Andy Zeng, and Wolfram Burgard Proceedings of the IEEE International Conference on Robotics and Automation (ICRA), London, UK, 2023

Peer-Reviewed Workshop Articles

- BYE: Build Your Encoder with One Sequence of Exploration Data for Long-Term Dynamic Scene Understanding and Navigation Chenguang Huang and Wolfram Burgard Conference on Robot Learning (CoRL): Workshop on Lifelong Learning for Home Robots, in Munich, Germany 2024
- Hierarchical Open-Vocabulary 3D Scene Graphs for Language-Grounded Robot Navigation
 Abdelrhman Werby*, Chenguang Huang*, Martin Büchner*, Abhinav Valada, and Wolfram Burgard
 (*Equal Contribution)
 IEEE International Conference on Robotics and Automation: Vision-Language Models for Navigation and Manipulation (VLMNM) Workshop in Yokohama, Japan 2024
- What Matters in Employing Vision Language Models for Tokenizing Actions in Robot Control? Nicolai Dorka*, Chenguang Huang*, Tim Welschehold, and Wolfram Burgard (*Equal Contribution)

EEE International Conference on Robotics and Automation: Vision-Language Models for Navigation and Manipulation (VLMNM) Workshop in Yokohama, Japan 2024

- Open X-Embodiment: Robotic Learning Datasets and RT-X Models
 Open X-Embodiment Collaboration
 Thirty-seventh Conference on Neddural Information Processing Systems (NeurIPS) 6th Robot Learning Workshop: Pretraining, Fine-Tuning, and Generalization with Large Scale Models
 (Robot Learning), New Orleans, the United States, 2023
- Open X-Embodiment: Robotic Learning Datasets and RT-X Models
 Open X-Embodiment Collaboration
 Conference on Robot Learning (CoRL) Workshop Towards Generalist Robots: Learning Paradigms for Scalable Skill Acquisition (TGR), Atlanta, the United States, 2023
- Open X-Embodiment: Robotic Learning Datasets and RT-X Models
 Open X-Embodiment Collaboration

Conference on Robot Learning (CoRL) Workshop on Language and Robot Learning (LangRob), Atlanta, the USA, 2023

Audio Visual Language Maps for Robot Navigation
 Chenguang Huang, Oier Mees, Andy Zeng, and Wolfram Burgard
 Conference on Computer Vision and Pattern Recognition (CVPR) Embodied AI Workshop, Vancouver, British Columbia, Canada, 2023

Software & Datasets

BYE: Build Your Encoder with One Sequence of Exploration Data for Long-Term Dynamic Scene Understanding and Navigation	https://byencoder.github.io
• A pipeline to train your own encoder for long-term dynamic scene understanding and navigation with a single trial of explo	ration data
 Hierarchical Open-Vocabulary 3D Scene Graphs for Language-Grounded Robot Navigation A hierarchical 3D scene graphs representation for storing instance-level visual-language features for floors, rooms, and obj 	https://hovsg.github.io ects
RoboVLM https://gu	ithub.com/Nicolinho/RoboVLM
An open-sourced implementation of training Vision Language Action Models for language-conditioned manipulation	
 Audio Visual Language Maps for Robot Navigation A unified 3D spatial map representation for storing cross-modal information from audio, visual, and language cues 	https://avlmaps.github.io
 Visual Language Maps for Robot Navigation A spatial map representation that fuses pretrained visual-language features with a 3D reconstruction of the physical world 	https://vlmaps.github.io

Professional Service

- Reviewer of IEEE Robotic and Automation Letter (RA-L)
- Reviewer of IEEE Transactions on Robotics (T-RO)
- Reviewer of IEEE International Conference on Robotics and Automation (ICRA)
- Reviewer of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
- Reviewer of Conference on Robot Learning (CoRL)

Technical Skills

Technology	Proficient in Python, Linux, ROS, pytorch, C++, familiar with tensorflow
Language	Mandarin and Cantonese (native language), proficient in English (TOEFL 108) and German (TestDaF 17)
Office	3D Modeling (AutoCAD/CATIA/Blender), Graph Design (Inkscape), video editing software (ShotCut), static
	website design, MS Office (PowerPoint, Office, Excel)
Theory	Familiar with Vision and Language Models, 3D reconstruction, Mobile Robotics, Probabilistic Robotics,
	Machine Learning, Deep Learning, AI algorithms

Media Coverage

Visual Language Maps for Robot Navigation

Google AI Blog, 2023