

Mingxuan LIU

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RESEARCH INTEREST

Improving machine Open-world Perception and Understanding through Open-vocabulary Object Detection, Vision-Language, Novel Knowledge Discovery, Multi-modal Learning, and Semi-/Un-supervised Learning techniques

EDUCATION

Università di Trento **Nov. 2022 – Present**
PhD student in Deep Learning and Computer Vision; Advisors: Elisa RICCI and Zhun ZHONG *Trento, Italy*

KTH Royal Institute of Technology **Sep. 2021 – 2022**
MSc in Intelligent Autonomous Systems; Grade: A *Stockholm, Sweden*

Università di Trento **Sep. 2020 – 2021**
MSc in Mechatronics Engineering; Grade: 110L, Summa cum laude *Trento, Italy*

Beijing University of Civil Engineering and Architecture **Sep. 2013 – Jun. 2017**
BSc in Energy and Power Engineering; Grade: 3.1/4.0 *Beijing, China*

WORK EXPERIENCE

NAVER LABS Europe **Jun. 2023 – Present**
Visiting Researcher (hybrid), Visual Representation Learning Team *Grenoble, France*

- **Topic:** Exploring open-vocabulary object detection with the help of extra knowledge sources
- **Advisors:** Gabriela CSURKA, Riccardo VOLPI, and Tyler L. HAYES

Ericsson **Jan. 2022 – Jun. 2022**
Master Thesis Intern, Department of Device Software Research *Lund, Sweden*

- **Title:** The V-SLAM Hurdler: A Faster V-SLAM System using Online Semantic Dynamic-and-Hardness-aware Approximation
- Approximate spatial computing for Simultaneous Localization and Mapping (SLAM) algorithm on AR/MR devices
- Investigate quantization methods for CNN-based Object Detection (YOLOv4) and Instance Segmentation algorithms (Mask R-CNN)
- Investigate the cloud-device cooperation mechanism of distributed Semantic SLAM based on the approximate computing techniques

Siemens (China) Co., Ltd. **Jul. 2017 – Jul. 2020**
Innovation Engineer, Department of Innovation, Building Technology Division *Beijing, China*

- Conducted innovative application research, market analysis and competitive product analysis in building automation industry with Internet-of-Things (IoT) technology
- Designed software and hardware solution for IoT-based application and demonstrated the solution
- Defined features and functions for the innovative products based on the new use cases
- Cooperated with the internal R&D and production departments, third-party partners (OEM manufacturers, value-added partners, system integrators) to develop and deploy innovative products
- Managed and deployed pilot projects of the innovative IoT-based products

PUBLICAPTIONS

SHiNe: Semantic Hierarchy Nexus for Open-vocabulary Object Detection *Seattle WA, USA*

The IEEE/CVF Conference on Computer Vision and Pattern Recognition (**CVPR**; **accepted as Highlight paper, 2.8% acceptance rate**), 2024

Mingxuan Liu, Tyler Hayes, Elisa Ricci, Gabriela Csurka, Riccardo Volpi

Democratizing Fine-grained Visual Recognition with Large Language Models *Vienna, Austria*

International Conference on Learning Representations (**ICLR**), 2024

Mingxuan Liu, Subhankar Roy, Wenjing Li, Zhun Zhong, Nicu Sebe, Elisa Ricci

Large-scale Pre-trained Models are Surprisingly Strong in Incremental Novel Class Discovery *Kolkata, India*

International Conference on Pattern Recognition (*ICPR*), 2024

Mingxuan Liu, Subhankar Roy, Zhun Zhong, Nicu Sebe, Elisa Ricci

Class-incremental Novel Class Discovery

Tel Aviv, Israel

European Conference on Computer Vision (*ECCV*), 2022

Subhankar Roy*, Mingxuan Liu*, Zhun Zhong, Nicu Sebe, Elisa Ricci (*= equal contribution)

Siemens Designo CC Building Management System Software and Practice

Beijing, China

Book; China Electric Power Press (*CEPP*), 2023; ISBN: 9787519853341

Huixia Zhao, Jiaxin Han, Kaixuan Zhang, Chao Wang, Lin Feng, Jianqiao Feng, Jian Li, Mingxuan Liu

Siemens RWG Control Platform Advanced Course and Practice

Beijing, China

Book; China Electric Power Press (*CEPP*), 2022; ISBN: 9787519859947

Jiaxin Han, Huixia Zhao, Kaixuan Zhang, Mingxuan Liu

PATENT

A Method for Using Semantic Hierarchy Trees to Increase the Robustness of OvOD Models

US Patent App. (status: filed; under processing)

Mingxuan Liu, Tyler Hayes, Elisa Ricci, Gabriela Csurka, Riccardo Volpi

TECHNICAL SKILLS

Programming language: Python, C/C++, Ada

Framework: ROS, PyTorch, OpenCV, Point Cloud Library (PCL), G2O, Eigen, Ceres, Sophus, LaTeX, ORB SLAM

Software: Unity, Maple

Skills I am learning: TensorRT, CUDA

PERSONAL SKILLS

Language proficiency: Chinese (native), English (fluent), Italian (Ciao and Ti amo only)

Hobbies: Bodybuilding, Hiking, Bouldering, Cooking

SELF-REFLECTION

PROS I have: Passionate; Willing to learn new things; Want to make things better; Hands-on skills and solid theoretical basis in the fields of 2D/3D computer vision, deep learning and robotics

CONS I am breaking: Better scientific writing skills; Experiences on multidisciplinary collaboration

COMMUNITY-SERVICE

NeurIPS:Reviewer 2024

CVPR:Reviewer 2024

ECCV:Reviewer 2024

IJCV:Reviewer 2024