Xieyuanli **Chen**

Associate Professor · NuBot

College of Intelligence Science and Technology, NUDT, China

xieyuanli.chen@nudt.edu.cn | www.xieyuanli-chen.com | Chen-Xieyuanli | GoogleScholar

Research Interests

Main Areas: SLAM, Localization, Scene Understanding, Robot Learning
Applications: Autonomous Vehicle; Rescue Robotics

Education

Dr.-Ing. (Ph.D. in Engineering) - *summa cum laude* (with distinction, best possible grade) *09.2018 - 08.2022*
University of Bonn, SUPERVISOR: Prof. Dr. Cyrill Stachniss *Bonn, Germany*
THESIS: LiDAR-Based Semantic Perception for Autonomous Vehicles

M.S. in Robotics *09.2015 - 12.2017*
National University of Defense Technology, SUPERVISOR: Prof. Dr. Hui Zhang *Hunan, China*
THESIS: Binary Visual Feature-based Monocular SLAM

B.S. in Electrical Engineering and Automation *09.2011 - 07.2015*
Hunan University, SUPERVISOR: Prof. Dr. Jianhao Tan, Prof. Dr. Yaonan Wang *Hunan, China*
THESIS: Control for a Quadrotor UVA

Research Experience

Academic Working Experience

Associate Editor *01.2023 - Present*
IEEE/RSJ Intl. Conf. on Intelligent Robots & Systems (IROS)

Associate Editor *09.2022 - Present*
IEEE Intl. Conf. on Robotics & Automation (ICRA)

Associate Editor *09.2022 - Present*
IEEE Robotics and Automation Letters (RA-L)

Research Assistant *11.2019 - 08.2022*
Photogrammetry & Robotics Lab, University of Bonn

Research Committee Membership

Technical Committee *07.2019 - Present*
RoboCup Rescue Robot League

Organizing Committee *07.2021 - 07.2022*
Robotics: Science and Systems (RSS) Pioneers 2022

Programme Committee *04.2022 - 07.2022*
RoboCup Symposium 2022

Organizing Committee *07.2017 - 07.2019*
RoboCup Rescue Robot League

Research Indices

GoogleScholar · h-index: 16 · i10-index: 20 · Number of citations: 1000+ *01.03.2023*
All indices determined using GoogleScholar with ID DvrngV4AAAAJ

GitHub · open-source projects: 24 · stars: 4000+ · forks: 800+ *01.03.2023*
All indices determined using GitHub with repositories contributed by ID Chen-Xieyuanli

Honors & Awards

RSS Pioneer *2021*
Robotics: Science and Systems (RSS)

Finalist of Best System Paper *2020*
Robotics: Science and Systems (RSS)

Best-in-Class Search and Inspect *2022*
Rescue Robot League (RRL), RoboCup

Best-in-Class Exploration and Mapping Scenario *2022*
Rescue Robot League (RRL), RoboCup

Best-in-Class Exploration and Mapping *2021*
Rescue Robot League (RRL), RoboCup

Ph. D. Student Scholarship *2018*
China Scholarship Council (CSC)

In recognition of Exceptional Performance as Associate Judge *2017*
Rescue Robot League (RRL), RoboCup

Winner of Rescue Robot Competition *2017*
IEEE Intl. Sym. on Safety, Security, and Rescue Robotics (SSRR)

Best-in-Class Small Robot Mobility *2016*
Rescue Robot League (RRL), RoboCup

Teaching Experience

Master Project: Visual LiDAR Odometry *2020*
Project, MSC

Advanced Techniques in Mobile Sensing and Robotics Course *2020*
Lecture, MSC

Master Project: Semantic Place Categorization *2019*
Project, MSC

Sensors and State Estimation Course *2019*
Lecture, MSC

Student Supervision as Responsible Supervisor

Master Thesis: Deep Learning-based Pole Extractor for Long-term LiDAR Global Localization *2022*
Student Name: Hao Dong

Intern Project: LiDAR-based Long-term Place Recognition *2022*
Student Name: Junyi Ma

Intern Project: LiDAR-based Moving Object Segmentation *2022*
Student Name: Jiadai Sun

Intern Project: Static Map Generation from Point Cloud Data *2021*
Student Name: Mehul Arora

Intern Project: Pole-based LiDAR Localization *2021*
Student Name: Hao Dong

Bachelor Thesis: Extracting Color and Semantic Information for LiDAR Point Clouds from Images *2020*
Student Name: Verena Anna Maria Fitzke

Publication List

Peer-reviewed journal articles

[1] **X. Chen**, T. Läbe, A. Milioto, T. Röhling, J. Behley, and C. Stachniss. OverlapNet: A Siamese Network for Computing LiDAR Scan Similarity with Applications to Loop Closing and Localization. *Autonomous Robots*, 46:61–81, 2021

[2] **X. Chen**, S. Li, B. Mersch, L. Wiesmann, J. Gall, J. Behley, and C. Stachniss. Moving Object Segmentation in 3D LiDAR Data: A Learning-based Approach Exploiting Sequential Data. *IEEE Robotics and Automation Letters (RA-L)*, 6:6529–6536, 2021

[3] **X. Chen**, B. Mersch, L. Nunes, R. Marcuzzi, I. Vizzo, J. Behley, and C. Stachniss. Automatic Labeling to Generate Training Data for Online LiDAR-Based Moving Object Segmentation. *IEEE Robotics and Automation Letters (RA-L)*, 7(3):6107–6114, 2022

[4] L. Nunes, **X. Chen***, R. Marcuzzi, A. Osep, L. Leal-Taixé, C. Stachniss, and J. Behley. Unsupervised Class-Agnostic Instance Segmentation in LiDAR Data for Autonomous Vehicles. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[5] J. Ma, J. Zhang, J. Xu, R. Ai, W. Gu, and **X. Chen***. OverlapTransformer: An Efficient and Rotation-Invariant Transformer Network for LiDAR-Based Place Recognition. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[6] H. Dong, **X. Chen***, and C. Stachniss. Online Pole Segmentation on Range Images for Long-term LiDAR Localization in Urban Environments. *Journal on Robotics and Autonomous Systems (RAS)*, 2022

[7] M. Arora, L. Wiesmann, **X. Chen***, and C. Stachniss. Static Map Generation from 3D LiDAR Point Clouds Exploiting Ground Segmentation. *Journal on Robotics and Autonomous Systems (RAS)*, 2022

[8] J. Ma, **X. Chen**, J. Xu, and G. Xiong. SeqOT: Spatial-Temporal Transformer Networks for Place Recognition Using Sequential LiDAR Data. *IEEE Trans. on Industrial Electronics (TIE)*, 2023

[9] Y. Cui, **X. Chen**, Y. Zhang, J. Dong, Q. Wu, and F. Zhu. Bow3d: Bag of words for real-time loop closing in 3d lidar slam. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[10] S. Li, **X. Chen**, Y. Liu, D. Dai, C. Stachniss, and J. Gall. Multi-scale Interaction for Real-time LiDAR Data Segmentation on an Embedded Platform. *IEEE Robotics and Automation Letters (RA-L)*, 7(2):738–745, 2022

[11] B. Mersch, **X. Chen**, I. Vizzo, L. Nunes, J. Behley, and C. Stachniss. Receding Moving Object Segmentation in 3D LiDAR Data Using Sparse 4D Convolutions. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[12] T. Guadagnino, **X. Chen**, M. Sodano, J. Behley, G. Grisetti, and C. Stachniss. Fast Sparse LiDAR Odometry Using Self-Supervised Feature Selection on Intensity Images. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[13] C. Shi, **X. Chen**, K. Huang, J. Xiao, H. Lu, and C. Stachniss. Keypoint Matching for Point Cloud Registration using Multiplex Dynamic Graph Attention Networks. *IEEE Robotics and Automation Letters (RA-L)*, 6:8221–8228, 2021

[14] N. Zimmerman, T. Guadagnino, **X. Chen**, J. Behley, and C. Stachniss. Long Term Localization using Semantic Cues in Floor Plan Maps. *IEEE Robotics and Automation Letters (RA-L)*, 2022

[15] L. Nunes, R. Marcuzzi, **X. Chen**, J. Behley, and C. Stachniss. SegContrast: 3D Point Cloud Feature Representation Learning through Self-supervised Segment Discrimination. *IEEE Robotics and Automation Letters (RA-L)*, 7(2):2116–2123, 2022

[16] L. Wiesmann, A. Milioto, **X. Chen**, C. Stachniss, and J. Behley. Deep Compression for Dense Point Cloud Maps. *IEEE Robotics and Automation Letters (RA-L)*, 6:2060–2067, 2021

[17] Y. Bai, Q. Zou, **X. Chen**, L. Li, Z. Ding, and L. Chen. Extreme low-resolution action recognition with confident spatial-temporal attention transfer. *Intl. Journal of Computer Vision (IJCV)*

Peer-reviewed conference papers

[1] **X. Chen**, A. Milioto, E. Palazzolo, P. Giguère, J. Behley, and C. Stachniss. SuMa++: Efficient LiDAR-based Semantic SLAM. In *Proc. of the IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)*, 2019

[2] **X. Chen**, T. Läbe, A. Milioto, T. Röhling, O. Vysotska, A. Haag, J. Behley, and C. Stachniss. OverlapNet: Loop Closing for LiDAR-based SLAM. In *Proc. of Robotics: Science and Systems (RSS)*, 2020

[3] **X. Chen**, T. Läbe, L. Nardi, J. Behley, and C. Stachniss. Learning an Overlap-based Observation Model for 3D LiDAR Localization. In *Proc. of the IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)*, 2020

[4] **X. Chen**, I. Vizzo, T. Läbe, J. Behley, and C. Stachniss. Range Image-based LiDAR Localization for Autonomous Vehicles. In *Proc. of the IEEE Intl. Conf. on Robotics & Automation (ICRA)*, 2021

[5] **X. Chen**, H. Lu, J. Xiao, and H. Zhang. Distributed monocular multi-robot slam. In *Proc. of the IEEE Intl. Conf. on CYBER technology in automation, control, and intelligent systems (CYBER)*, 2018

[6] **X. Chen**, H. Zhang, H. Lu, J. Xiao, Q. Qiu, and Y. Li. Robust SLAM system based on monocular vision and LiDAR for robotic urban search and rescue. In *Proc. of the IEEE Intl. Sym. on Safety, Security, and Rescue Robotics (SSRR)*, pages 41–47, 2017

[7] **X. Chen**, H. Lu, J. Xiao, H. Zhang, and P. Wang. Robust relocalization based on active loop closure for real-time monocular slam. In *Proc. of the Intl. Conf. on Computer Vision Systems (ICVS)*, 2017

[8] J. Sun, Y. Wang, M. Feng, D. Wang, J. Zhao, C. Stachniss, and **X. Chen***. ICK-Track: A Category-Level 6-DoF Pose Tracker Using Inter-Frame Consistent Keypoints for Aerial Manipulation. In *Proc. of the IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)*, 2022

[9] J. Sun, Y. Dai, X. Zhang, J. Xu, R. Ai, W. Gu, and **X. Chen***. Efficient Spatial-Temporal Information Fusion for LiDAR-Based 3D Moving Object Segmentation. In *Proc. of the IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)*, 2022

[10] H. Dong, **X. Chen***, M. Dusmanu, V. Larsson, M. Pollefeys, and C. Stachniss. Learning-based dimensionality reduction for local feature descriptors. In *Proc. of the IEEE Intl. Conf. on Robotics & Automation (ICRA)*, 2023

[11] H. Dong, **X. Chen***, and C. Stachniss. Online Range Image-based Pole Extractor for Long-term LiDAR Localization in Urban Environments. In *Proc. of the Europ. Conf. on Mobile Robotics (ECMR)*, 2021

[12] I. Vizzo, **X. Chen**, N. Chebrolu, J. Behley, and C. Stachniss. Poisson Surface Reconstruction for LiDAR Odometry and Mapping. In *Proc. of the IEEE Intl. Conf. on Robotics & Automation (ICRA)*, 2021

[13] B. Mersch, **X. Chen**, J. Behley, and C. Stachniss. Self-supervised Point Cloud Prediction Using 3D Spatio-temporal Convolutional Networks. In *Proc. of the Conf. on Robot Learning (CoRL)*, 2021

[14] A. Reinke, **X. Chen**, and C. Stachniss. Simple But Effective Redundant Odometry for Autonomous Vehicles. In *Proc. of the IEEE Intl. Conf. on Robotics & Automation (ICRA)*, 2021

[15] M. Zhou, **X. Chen**, N. Samano, C. Stachniss, and A. Calway. Efficient localisation using images and openstreetmaps. In *Proc. of the IEEE/RSJ Intl. Conf. on Intelligent Robots and Systems (IROS)*, 2021

[16] M. Arora, L. Wiesmann, **X. Chen**, and C. Stachniss. Mapping the Static Parts of Dynamic Scenes from 3D LiDAR Point Clouds Exploiting Ground Segmentation. In *Proc. of the Europ. Conf. on Mobile Robotics (ECMR)*, 2021

[17] S. Yang, L. Zheng, **X. Chen**, L. Zabawa, M. Zhang, and M. Wang. Transfer Learning from Synthetic In-vitro Soybean Pods Dataset for In-situ Segmentation of On-branch Soybean Pod. In *Proc. of the IEEE/CVF Conf. on Computer Vision and Pattern Recognition Workshops (CVPRW)*, 2022

[18] L. Nunes, L. Wiesmann, R. Marcuzzi, **X. Chen**, J. Behley, and C. Stachniss. Transfer Learning from Synthetic In-vitro Soybean Pods Dataset for In-situ Segmentation of On-branch Soybean Pod. In *Proc. of the IEEE/CVF Conf. on Computer Vision and Pattern Recognition (CVPR)*, 2022