Xinyuan Yan

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Education

Beijing University Of Civil Engineering And Architecture   **Beijing, China** *09/2022 - present*
Specialization: Perception Algorithm for Autonomous Driving in Adverse Weather   Graduation: *07/2025*
Supervisor: Prof. He Huang
GPA: 90.95/100; Rank: 10/130

North China University of Water Resources and Electric Power   **Henan, China** *09/2018 - 06/2022*
Major: Surveying and Mapping Engineering
GPA: 88.34/100; Rank: 6/100

Publications

SnowSTNet: A Spatial-Temporal LiDAR Point Cloud Denoising Network for Autonomous Driving in Snowy Weather (Conference Paper)   *February 2025*
Yida Li, **Xinyuan Yan**, He Huang, Yu Liang, Yidan Zhang, Junxing Yang*
Accepted as a oral presentation at *ISPRS Geospatial Week 2025* in Dubai

AdverseNet: A LiDAR Point Cloud Denoising Network for Autonomous Driving in Rainy, Snowy, and Foggy Weather (JCR:Q1 IF=4.3)   *07 January 2025*
Xinyuan Yan, Junxing Yang*, Yu Liang, Yanjie Ma, Yida Li, and He Huang
Published in *IEEE Sensors Journal*

Denoising Framework Based on Multiframe Continuous Point Clouds for Autonomous Driving LiDAR in Snowy Weather (JCR:Q1 IF=4.3)   *31 January 2024*
Xinyuan Yan, Junxing Yang, Xinyu Zhu, Yu Liang, and He Huang
Published in *IEEE Sensors Journal*

LIDSOR: A Filter for Removing Rain and Snow Noise Points from LiDAR Point Clouds in Rainy and Snowy Weather (Conference Paper)   *13 December 2023*
He Huang, **Xinyuan Yan**, Junxing Yang, Yuming Cao, and Xin Zhang
Accepted as a poster presentation and published in the proceedings of *ISPRS Geospatial Week 2023* in Cairo

Under Review

A Review of Point Cloud Denoising for Vehicle-Mounted LiDAR in Adverse Weather Conditions (Review Paper)
September 2024
Xinyuan Yan, Yida Li, Junxing Yang, Yu Liang, and He Huang

Research Experience

Project on the Review of Point Cloud Denoising for Vehicle-Mounted LiDAR in Adverse Weather Conditions
BUCEA GuanZhi Lab   **Beijing, China** *07/2024 - 09/2024*

- As the first author, I drafted the framework for the review paper based on my previous research experience, in combination with the major research advancements of the past decade.

- Yida Li summarized each adverse weather dataset and every point cloud denoising method, while I was responsible for integrating these contents.

- Finally, I assessed the current challenges faced in the field of point cloud denoising, explored future development directions, and wrote the paper, which is currently under review.

Research Project on Point Cloud Denoising Network for Adverse Weather
BUCEA GuanZhi Lab **Beijing, China** *03/2024 - 06/2024*

- As the first author, proposed a unified point cloud denoising network for adverse weather, AdverseNet, which is capable of removing rain, snow, and fog noise points from LiDAR point clouds.

- In AdverseNet, used Cylindrical Tri-Perspective View (TPV) to represent point clouds and adopted a two-stage training strategy. The first stage focused on learning common features of rain, snow, and fog noise points, while the second stage learned specific weather features.

- Collaborated with one junior female colleague and two junior male colleagues to conduct comparative experiments between AdverseNet and state-of-the-art methods in rainy, snowy, and foggy weather, analyzed results, and wrote the paper. The paper has been accepted for publication in *IEEE Sensors Journal.*

Research Project on Removing Noise Points from Multi-Frame Continuous Point Clouds in Snowy Weather
BUCEA GuanZhi Lab **Beijing, China** *09/2023 - 11/2023*

- As the first author, led this project by selecting the Boreas dataset released by the University of Toronto in 2023. Collaborated with two junior female colleagues to label noise points individually.

- Introduced prior knowledge that snow noise points is disordered, and proposed a point cloud denoising framework to allow ordered objects strengthen each other while allowing disordered objects to weaken each other.

- Conducted experiments in various snowfall and road scenarios, analyzed results, and wrote the paper. The work was accepted and published in the *IEEE Sensors Journal.*

Research Project on Removing Noise Points from LiDAR Point Clouds in Rainy and Snowy Weather
BUCEA GuanZhi Lab **Beijing, China** *09/2022 - 07/2023*

- Contributed as the second author to this project under the supervision of Prof. He Huang. As the project's primary lead, used the data collection platform at GuanZhi Lab to collect point cloud data in rainy and snowy weather on the BUCEA campus and manually annotated noise points.

- Conducted feature analysis on distance and intensity for annotated point cloud data in both rain and snow, and further used gamma distribution curves to describe distance features.

- Proposed the LIDSOR filtering algorithm and conducted experiments on the collected dataset, analyzed results, and wrote the paper. The work was accepted as a poster presentation at *ISPRS Geospatial Week 2023 in Cairo.*

Selected Awards and Honors

- **China National Graduate Student Scholarship (top 8% students in BUCEA)** at the School of Geomatics and Urban Spatial Informatics, Beijing University of Civil Engineering and Architecture *2024*

- Two software copyrights at the School of Geomatics and Urban Spatial Informatics, Beijing University of Civil Engineering and Architecture *2024*

- Second-Class Academic Scholarship at the School of Geomatics and Urban Spatial Informatics, Beijing University of Civil Engineering and Architecture *2023*

- First-Class Academic Scholarship at the School of Geomatics and Urban Spatial Informatics, Beijing University of Civil Engineering and Architecture *2022*

- Undergraduate Student Innovation and Entrepreneurship Training Program Project at North China University of Water Resources and Electric Power, "Good" Evaluation *2021*

- First Prize in the Undergraduate Student Surveying Skills Competition at North China University of Water Resources and Electric Power *2021*

Skills

- Proficient in programming languages like Python and C++.

- Skilled in deep learning frameworks such as PyTorch, TensorFlow, and Caffe, with a good understanding of model and framework optimization techniques.

- Familiar with fundamental knowledge and algorithms of computer vision and deep learning, and possess relevant research experience.

- Well-versed in the Ubuntu operating system and the ROS1/ROS2 robot operating system.

- CET-6 score: 483, TOEFL score: 73.