



**Call for Papers**  
**Journal of Advances in Information Fusion (JAIF)**  
**Special Issue on Automotive Radar Perception Systems**

Autonomous driving (AD) poses unique challenges for vehicle environment perception system in complicated driving scenarios. Automotive Radar systems, along with Lidar and Camera systems, are a major perception tool for driverless automation. Automotive Radar has already existed as a must-have component in many advanced driver assistant systems (ADAS) and nowadays AD systems have a higher requirement for Radar sensors to provide imaging like capabilities and carry out more comprehensive perception tasks. There are two major technical lessons learned in recently years on automotive Radar systems for vehicle intelligence: 1) current Radar data analysis must be extended to deep learning, extended object tracking and comprehensive scene understanding to keep Radar in the leading edge of remote sensing. This requires significant improvement of automotive Radar systems to deliver higher resolution data and rigorous engineering capability to handle the corresponding dense Radar point clouds. 2) Most Radar-based ADAS/AD modules are single-sensor based; multi-sensor homogeneous/heterogeneous fusion is a natural choice to achieve higher automation degree in weather condition free scenarios. The development of V2X and 5G communication systems make possible a low latency Radar data processing network for both centralized and edge sensor fusion.

There are some well-known public (labeled) datasets for researchers on the topic:

- 1) Mercedes-Benz Radar Team RadaScenes: <https://radar-scenes.com/>
- 2) Tongji University TJ4DRadSet: <https://github.com/TJRadarLab/TJ4DRadSet>
- 3) nuScenes dataset: <https://www.nuscenes.org/nuscenes>
- 4) Or check out more at: <https://scale.com/>

In this special issue of JAIF, we seek submissions of automotive Radar works on recent advances in data analysis using state-of-the-art 77-79GHz high resolution automotive Radar systems. The topics of the special issue are expected to reflect recent efforts (but not limited) on:

- Radar-based extended object tracking
- Radar-based deep learning
- Multi-Radar homogeneous fusion
- Multi-sensor heterogeneous fusion using Radar + Lidar and/or Camera
- Radar data auto-labeling/evaluation/validation
- Radar data feature extraction/pattern recognition
- Radar based SLAM/Mapping/Localization/Perception/Planning

- Radar-based automotive applications
- Radar-based V2X-5G applications

The special issue is tentatively scheduled for Dec. 2024. Good conference papers from Fusion2023 (26th International Conference on Information Fusion) can be recommended for the special issue.

## **Editors**

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## **Timeline**

- 1 Dec. 2023 – submission deadline
- 1 Feb. 2024 – 1st decision sent to authors
- 1 May. 2024 – 1st revision deadline
- 1 Aug. 2024 – 2nd decision sent to authors
- 1 Sep. 2024 – 2nd revision deadline
- 1 Nov 2024 – final decision sent to authors
- 15 Nov 2024 – final manuscript deadline
- Dec. 2024 – publication JAIF Vol.19(2)

## **Submissions**

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