(SD2019-414) MIMO synchronized large aperture Radar

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ABSTRACT

Researchers from UC San Diego developed Pointillism, a system that enables radars to overcome the challenges posed by specular reflections, sparsity and noise in the radar point clouds, to provide high-fidelity perception of the scene with 3D bounding boxes. Pointillism consists of multiple low-resolution radars placed in a optimal fashion to maximize the spatial diversity and scene information. Pointillism combines this spatial diversity with novel multi-radar fusion algorithms to tackle the problem of specular reflections, sparsity and noise in radar point clouds. Building upon the hardware and algorithms, Pointillism also introduces a novel data-driven approach that enables the detection of multiple dynamic objects in the scene, with their accurate location, orientation and 3D dimensions. Furthermore, Pointillism enables such perception even in inclement weather, thereby paving a way for radar to be the main-stream sensor for autonomous perception.

OTHER INFORMATION

KEYWORDS

mmWaves, Radar Perception, Deep Learning, Adverse Weather, Autonomous Driving, Object Detection

CATEGORIZED AS

- **Communications**
  - Other
- **Transportation**
  - Automotive
- **Engineering**
  - Robotics and Automation

RELATED CASES

2021-Z08-1

INTELLECTUAL PROPERTY INFO

This patent-pending technology is available for commercial development. Please contact if you are interested in commercializing this technology.

RELATED MATERIALS

- Kshitiz Bansal, Keshav Rungta, Siyuan Zhu, and Dinesh Bharadia. 2020. Pointillism: accurate 3D bounding box estimation with multi-radars. In Proceedings of the 18th Conference on Embedded Networked Sensor Systems (SenSys '20). Association for Computing Machinery, New York, NY, USA, 340–353. - 11/16/2020