MARSIM: A light-weight point-realistic simulator for LiDAR-based UAVs

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MARS

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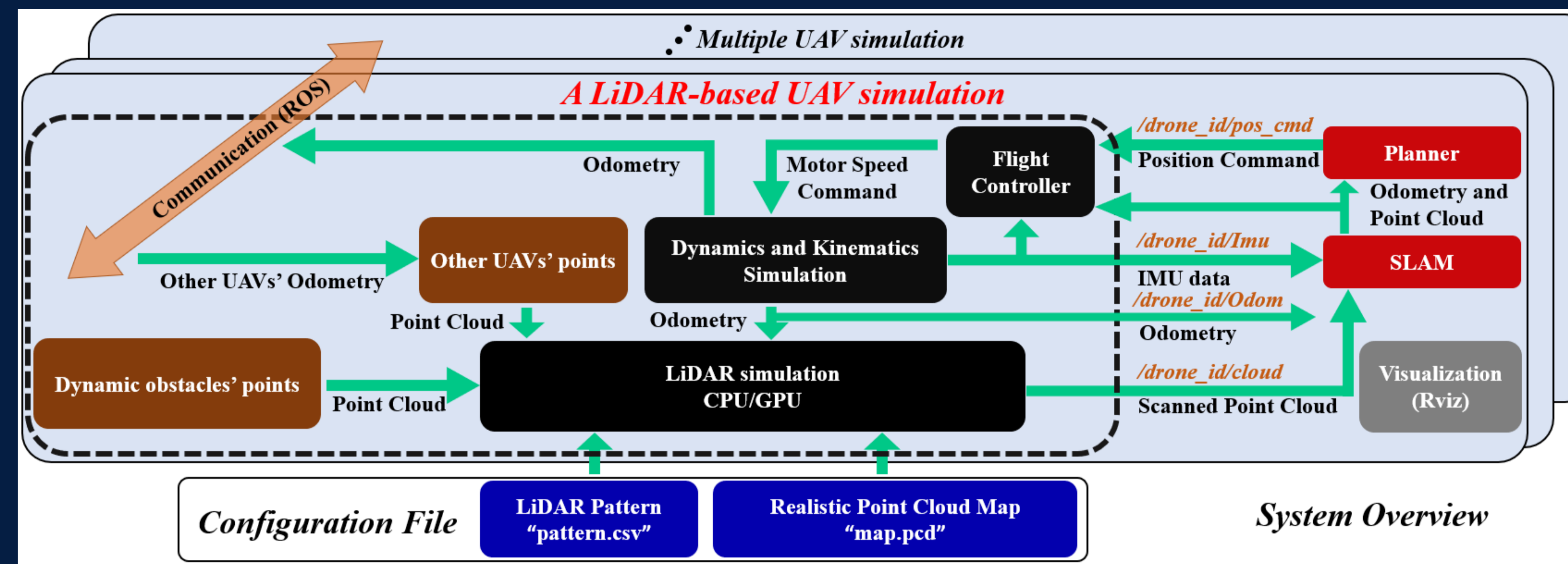
Overview

Problem:
Existing simulators can hardly perform simulations of real-world environments due to the requirements of dense mesh maps that are difficult to obtain.
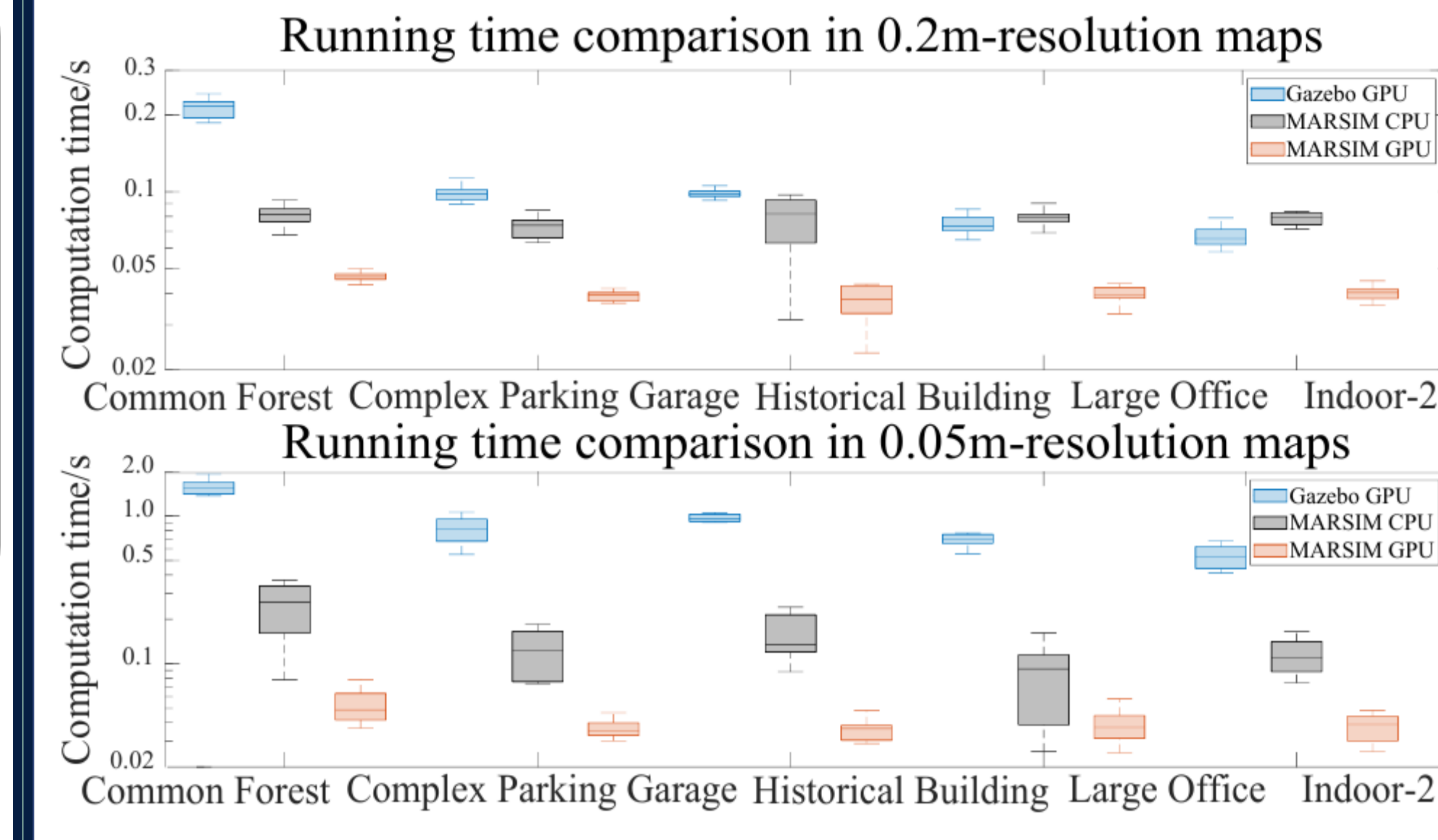
Contributions:

- Directly utilizing high-resolution point cloud maps reconstructed from real environments for LiDAR.

- High efficiency in computation and memory consumption.

- Support of dynamic obstacles, multi-UAV and multiple types of LiDARs.

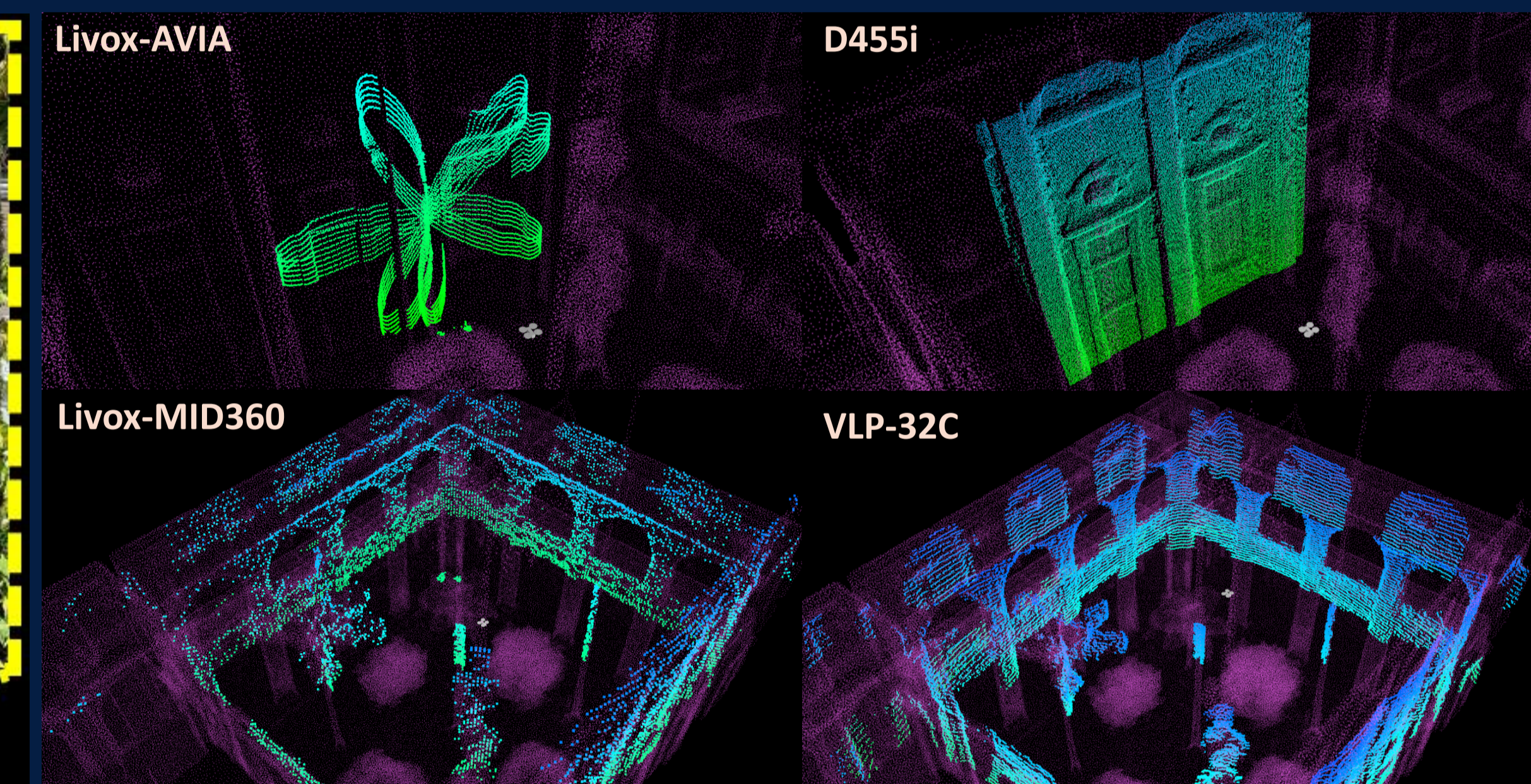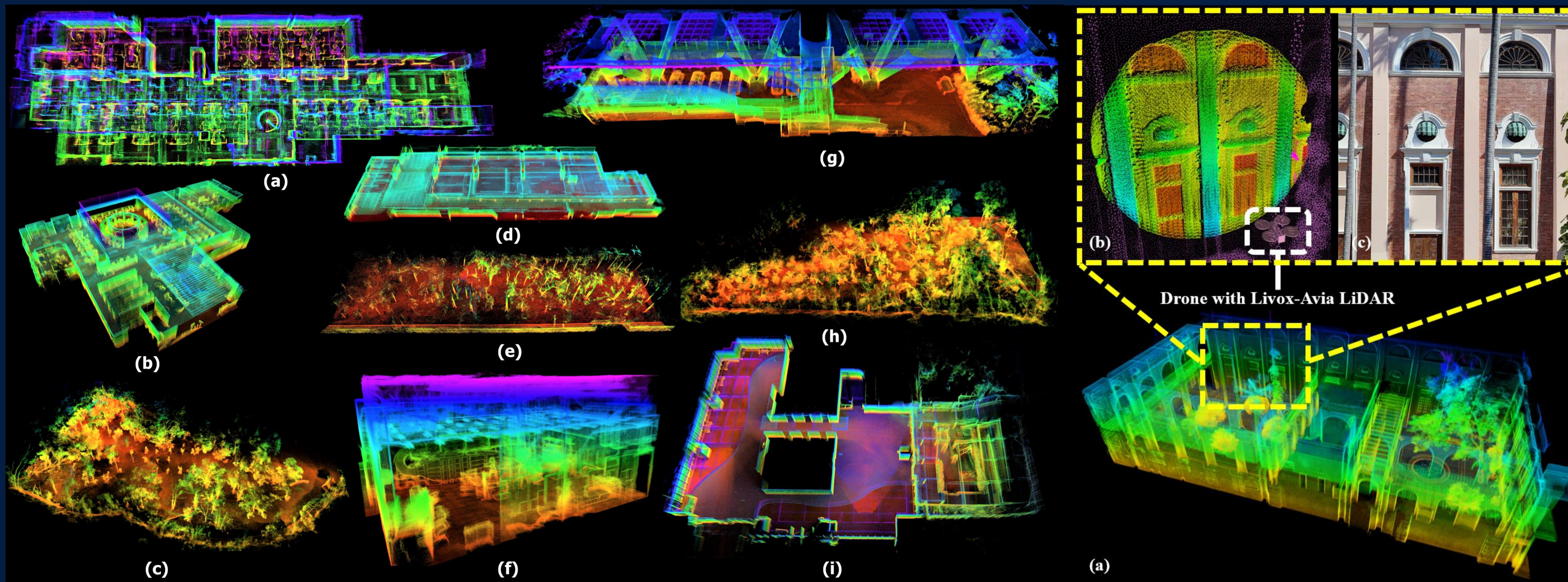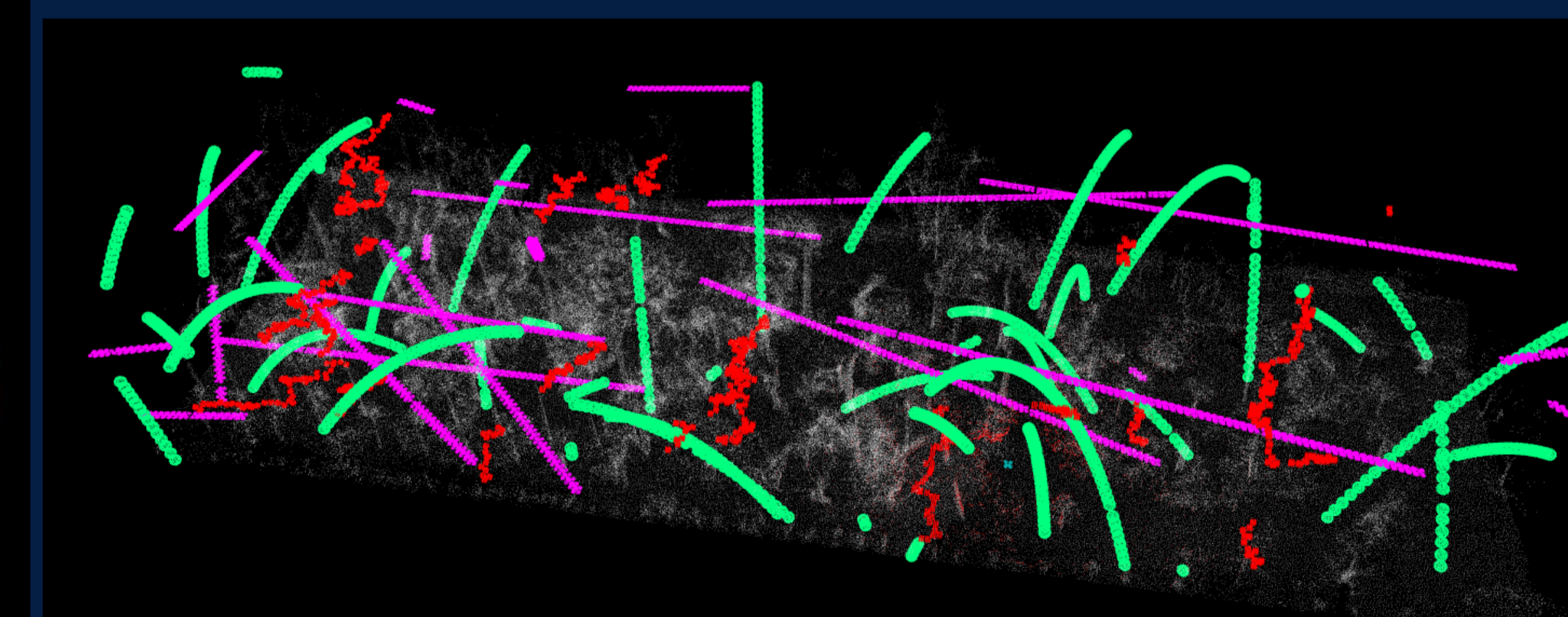- Already Open-sourced! Scan QR to GitHub →

Workflow

System Overview

Time consuming comparison

Results

Ten high-resolution (0.01 m) realistic point cloud maps provided with MARSIM and a demo shows scanning of a Livox-AVIA LiDAR that restore the details of real-world constructions.
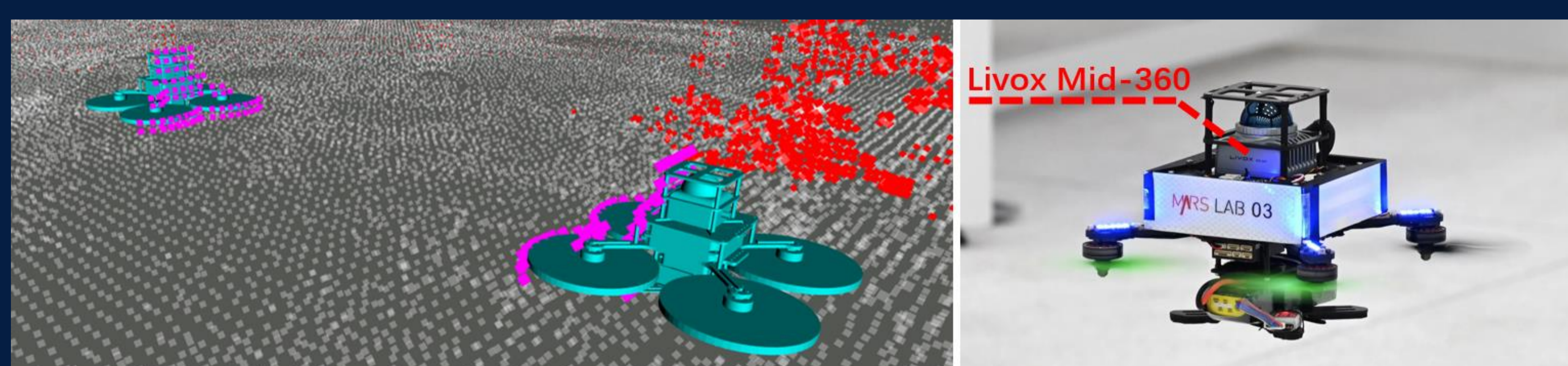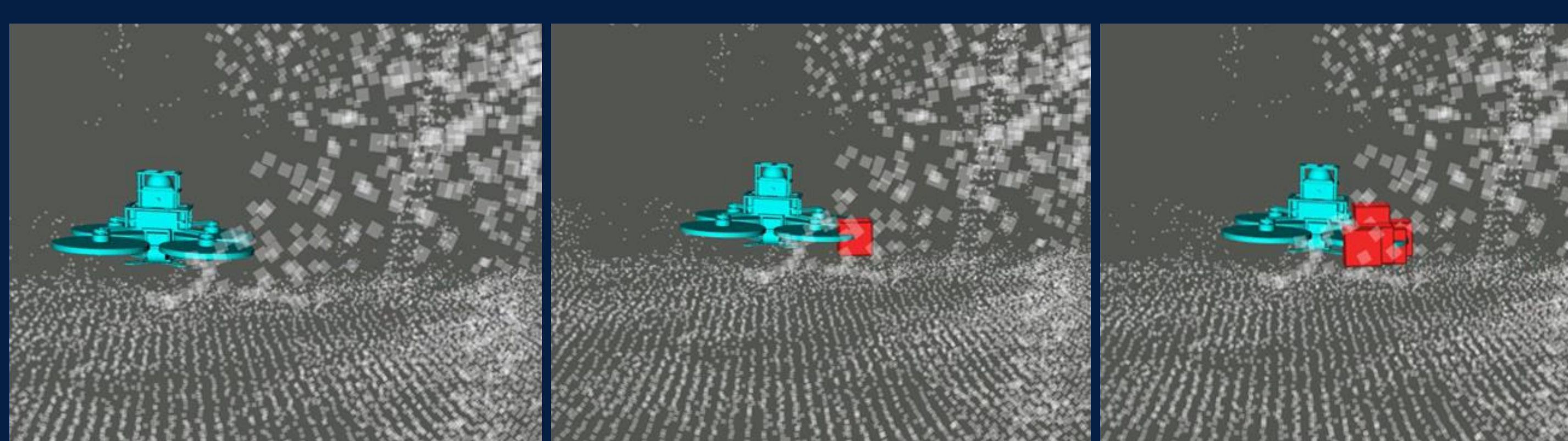
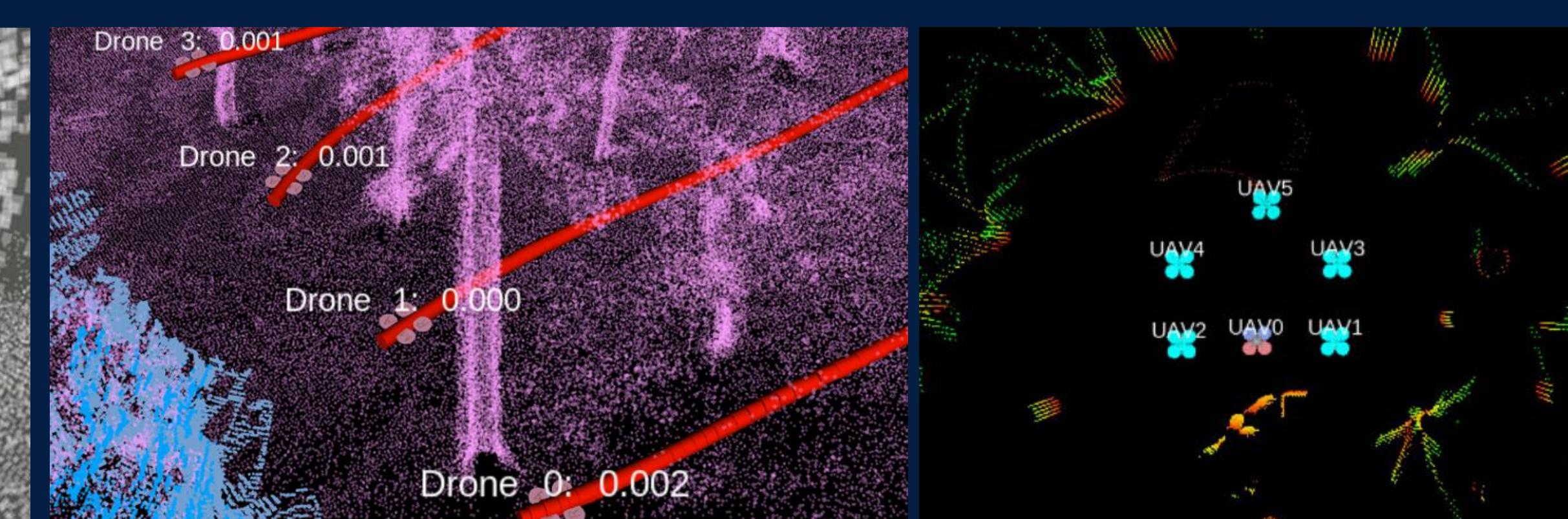**Support of multiple types of LiDARs**

Support of three types of dynamic obstacles

Realistic UAV model and mutual observation

Support of high-resolution collision detection

Support of multiple UAVs' simulation: over 30 drones with a 3070ti