



Long-Term Human-Robot Teaming for Robot Assisted Disaster Response



How can MAVs assist human-robot teams in disaster response over multiple sorties?

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Typical applications for Micro Aerial Vehicles (MAVs) in
Urban Search and Rescue environments:

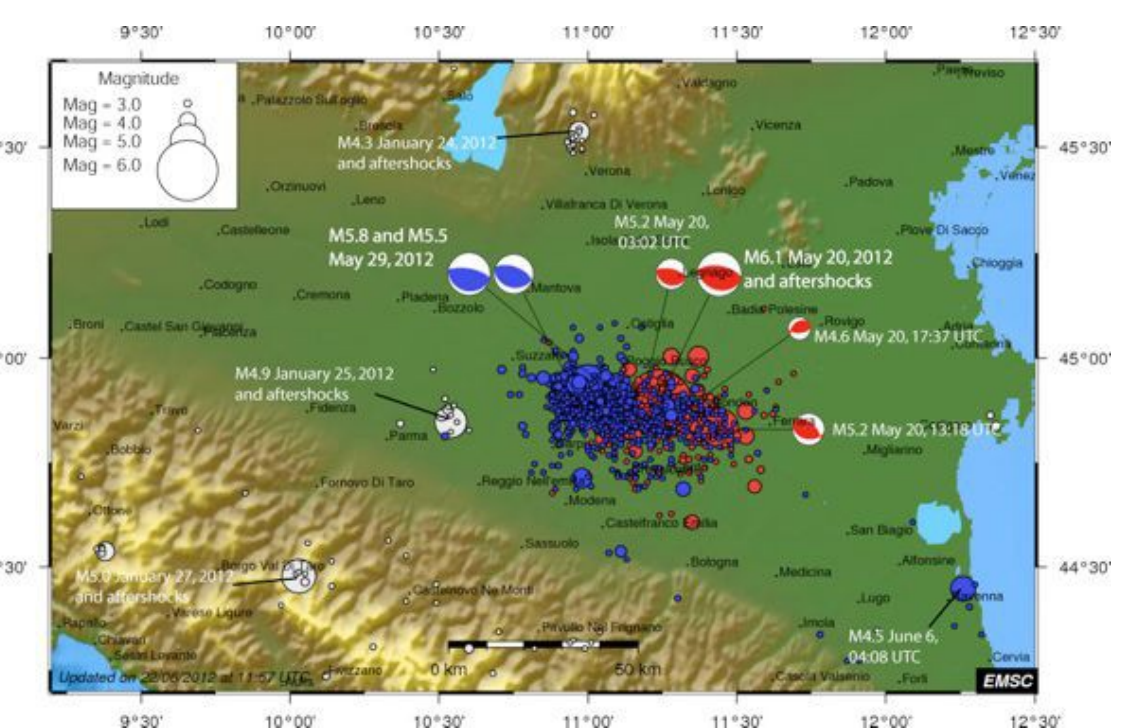
- **Aerial photography, Inspection tasks, 3D Modeling**

Disaster response is not just “in-and-out”.

MAVs perform multiple sorties during missions.

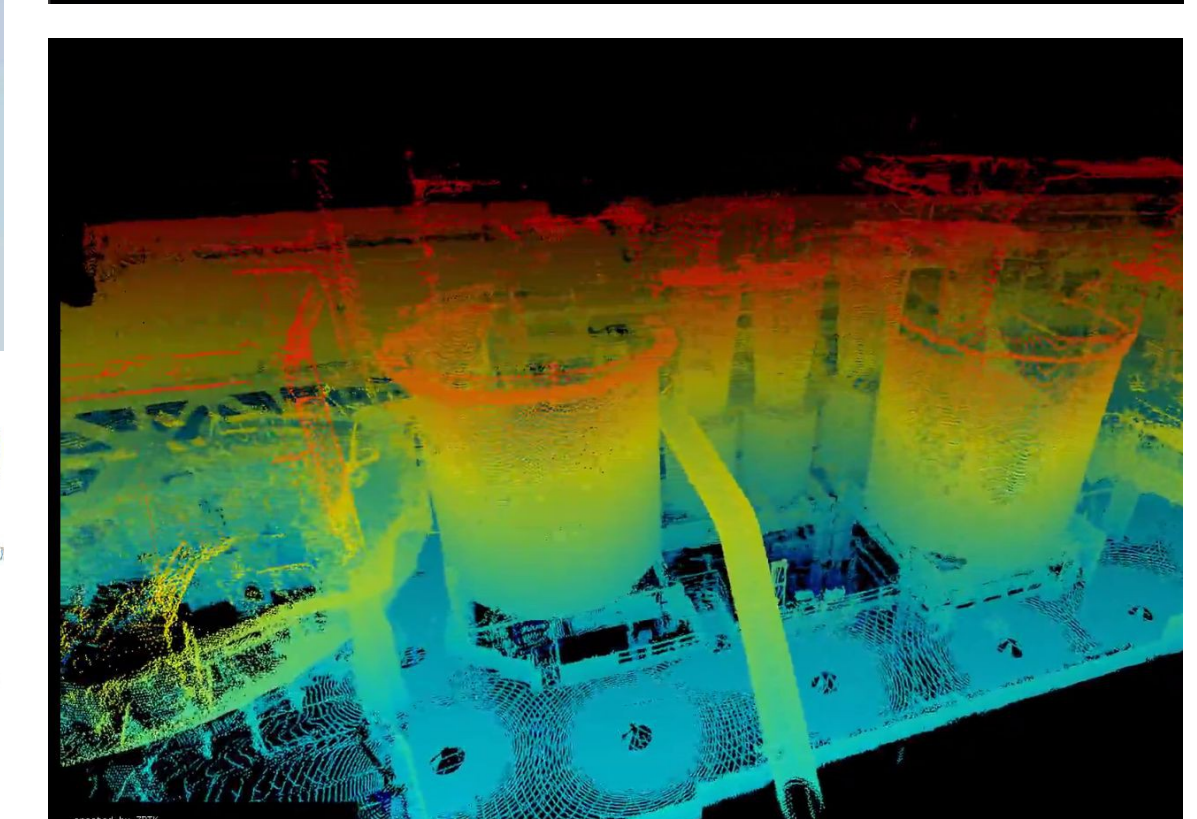
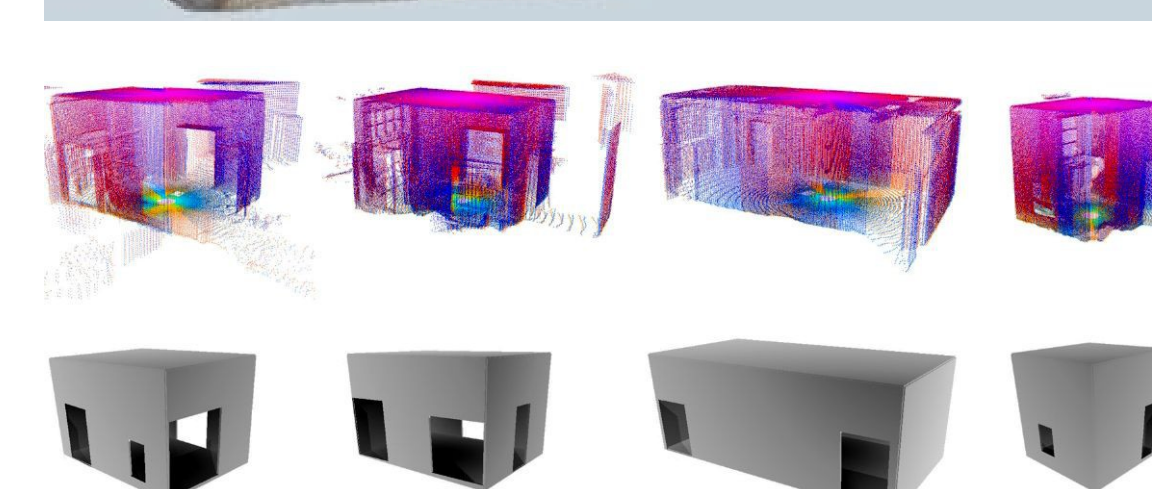
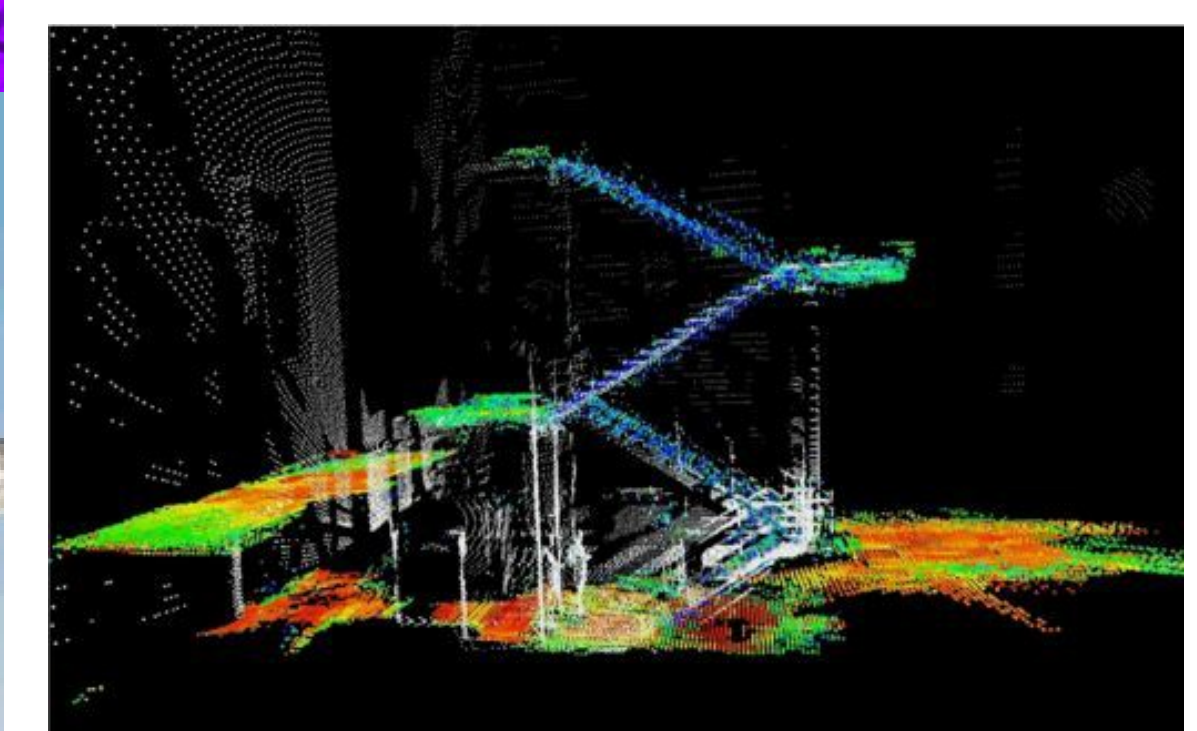
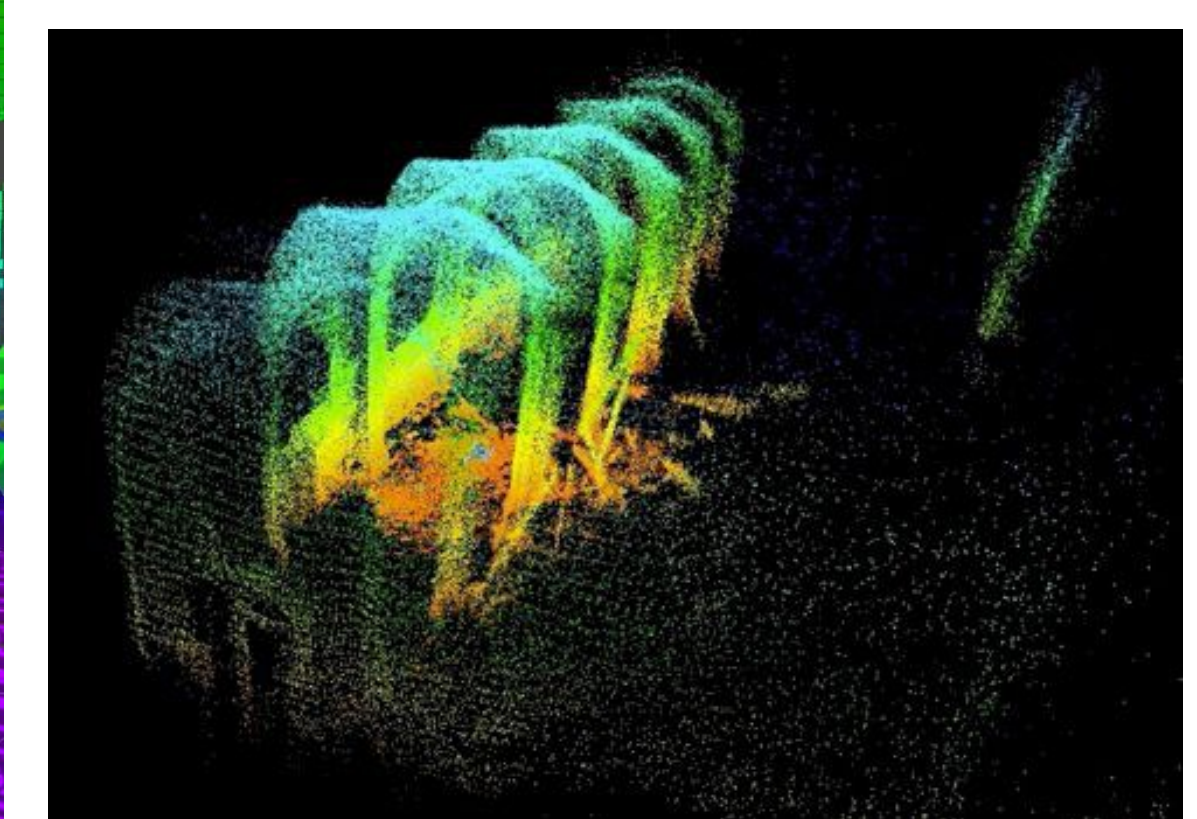
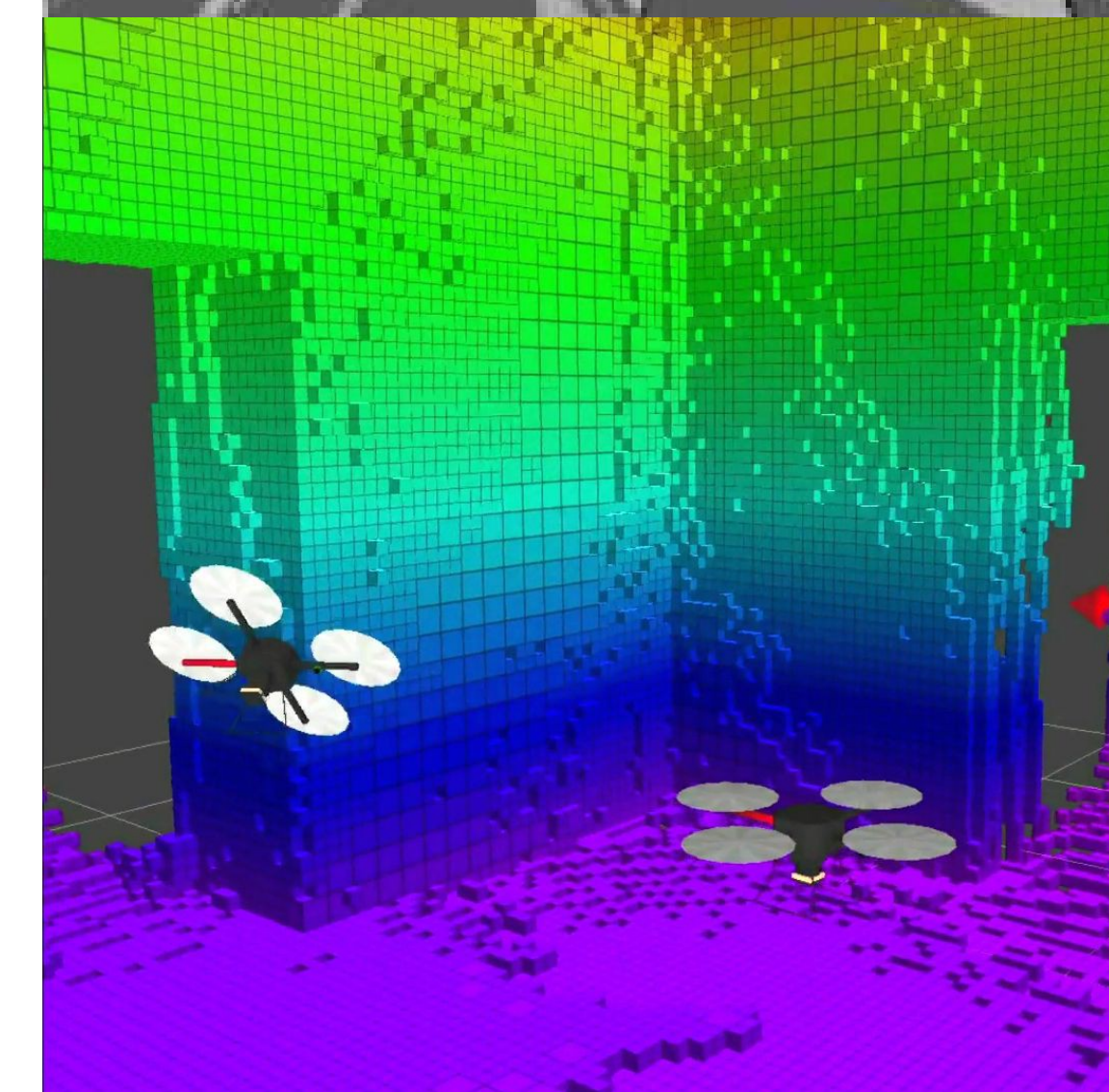
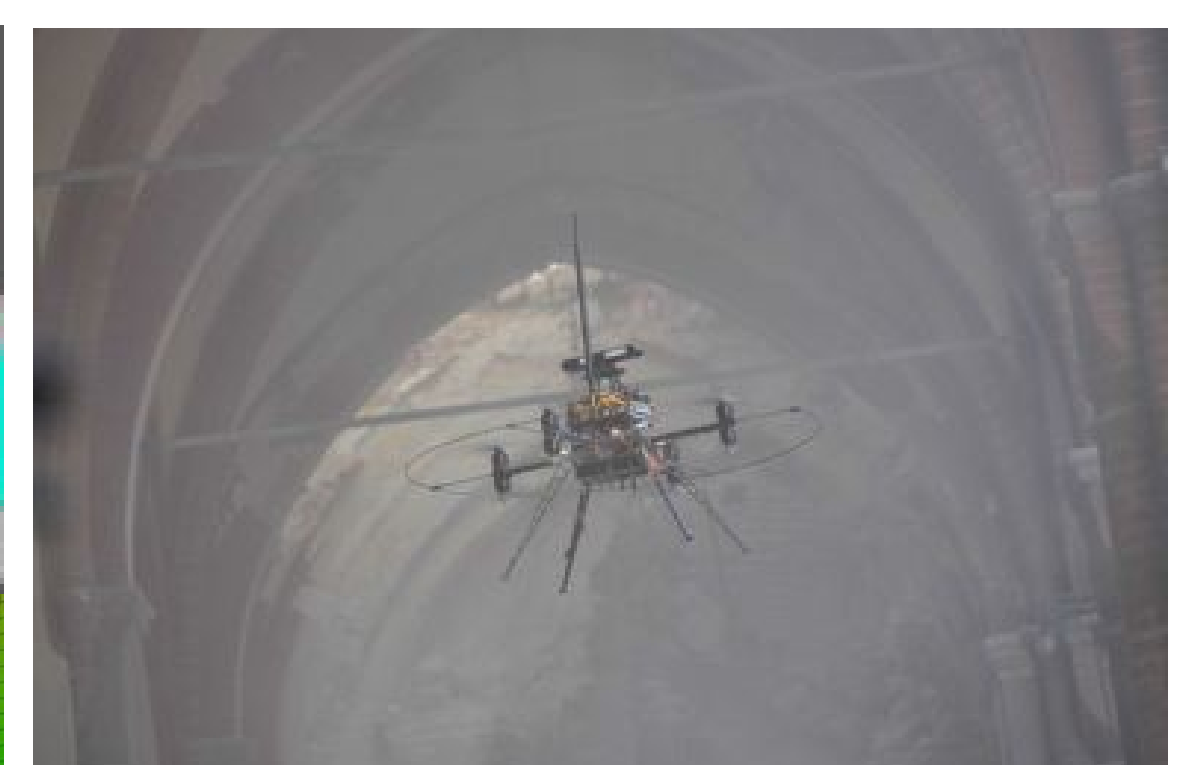
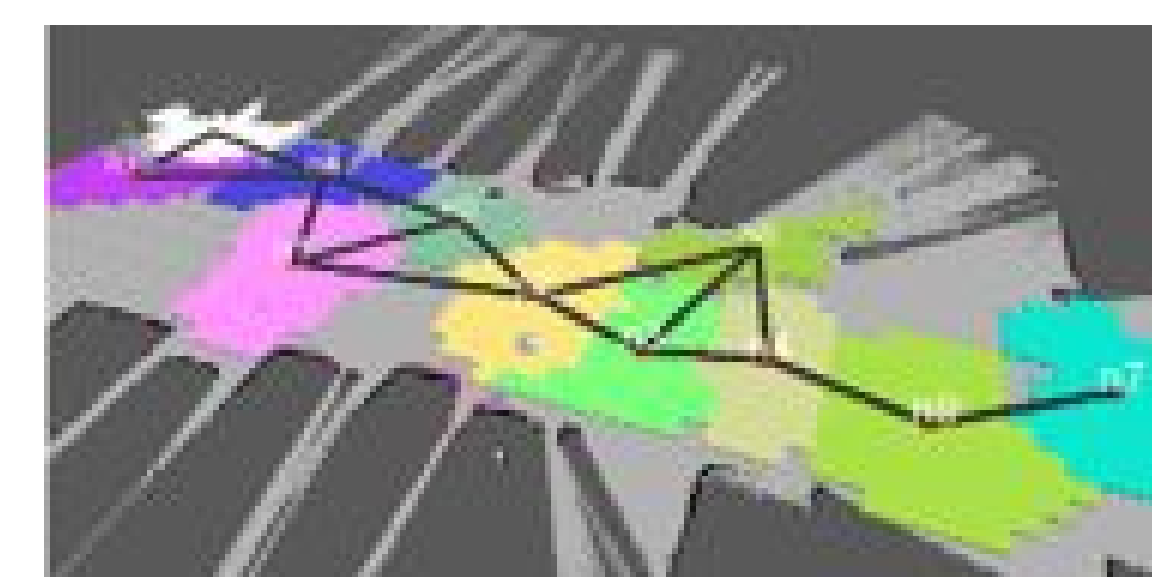
Needed:

- **Integration** of information, to create persistent situation awareness.
- **Fusion and integration** of different sensors i.e. Mono / Stereo / Omni Cameras, 2D / 3D Laser scanners, Radar, GPS, Gyros, Compass ...



MAV actions

1. Localization and Planning
2. Construction of 3D models for dynamic environments, from observations obtained **over time** across **multiple sorties**
3. Persistent models for MAVs acting in environments with or without GPS.
4. Persistent models for human-robot teaming



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