



3D scanning and model reconstruction based on laser SLAM

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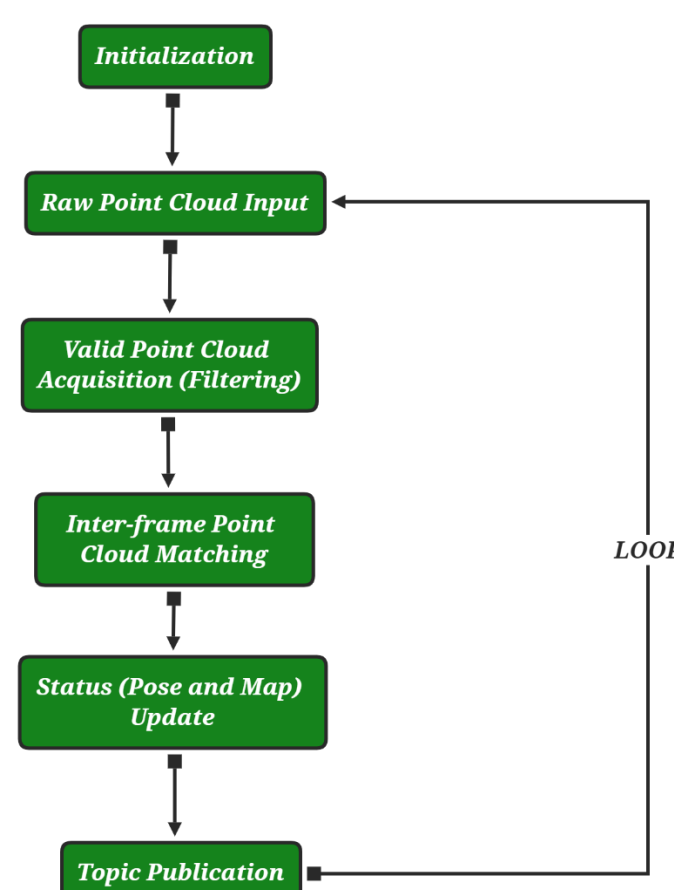
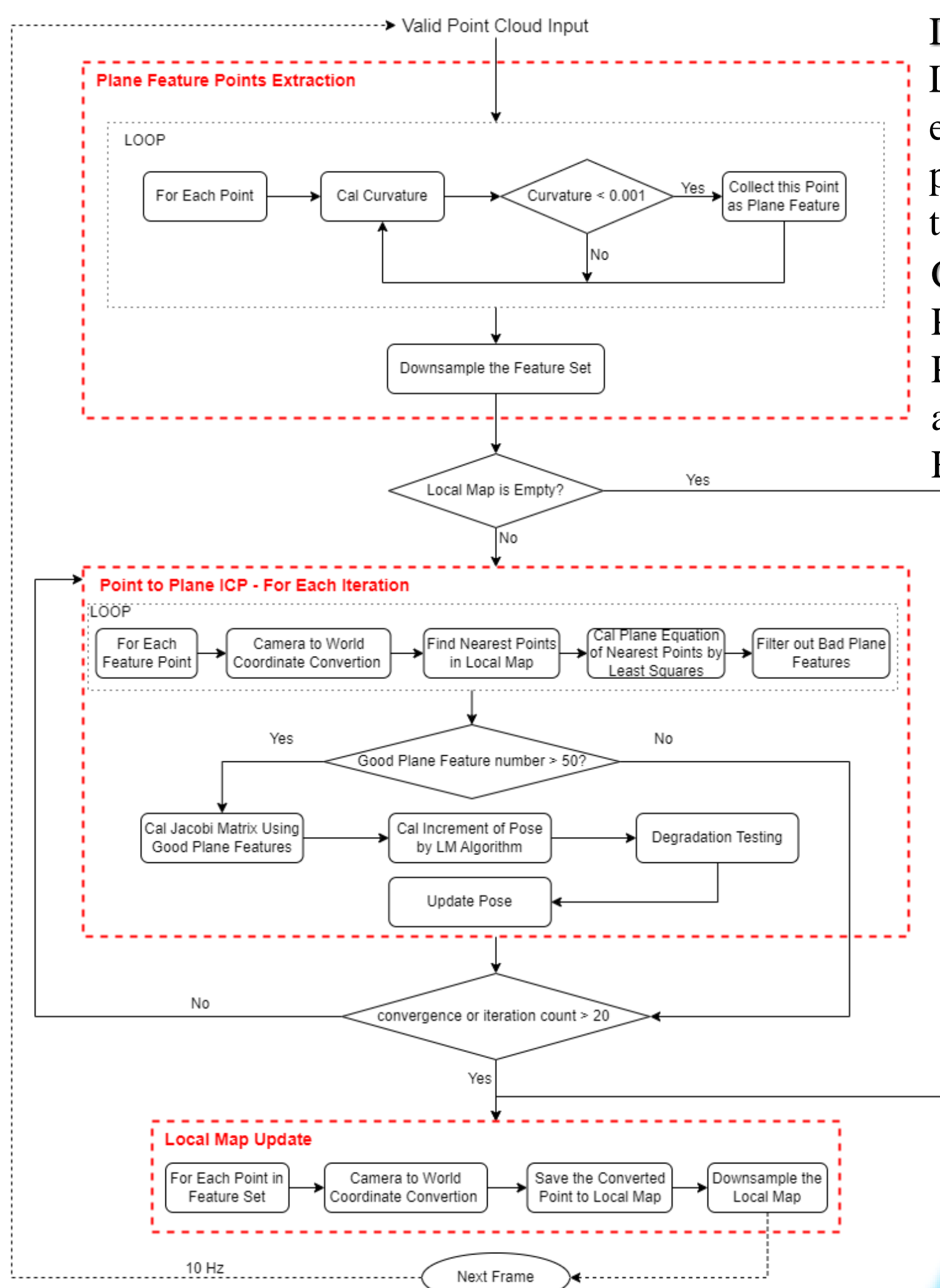
Laser Odometry

Description

Laser Odometry is in charge of estimating robot poses and producing local maps based on these poses.

Composition

Point-to-plane Iterative Closest Point, Levenberg–Marquardt, and Attitude and Heading Reference System.



3D Visualization Game

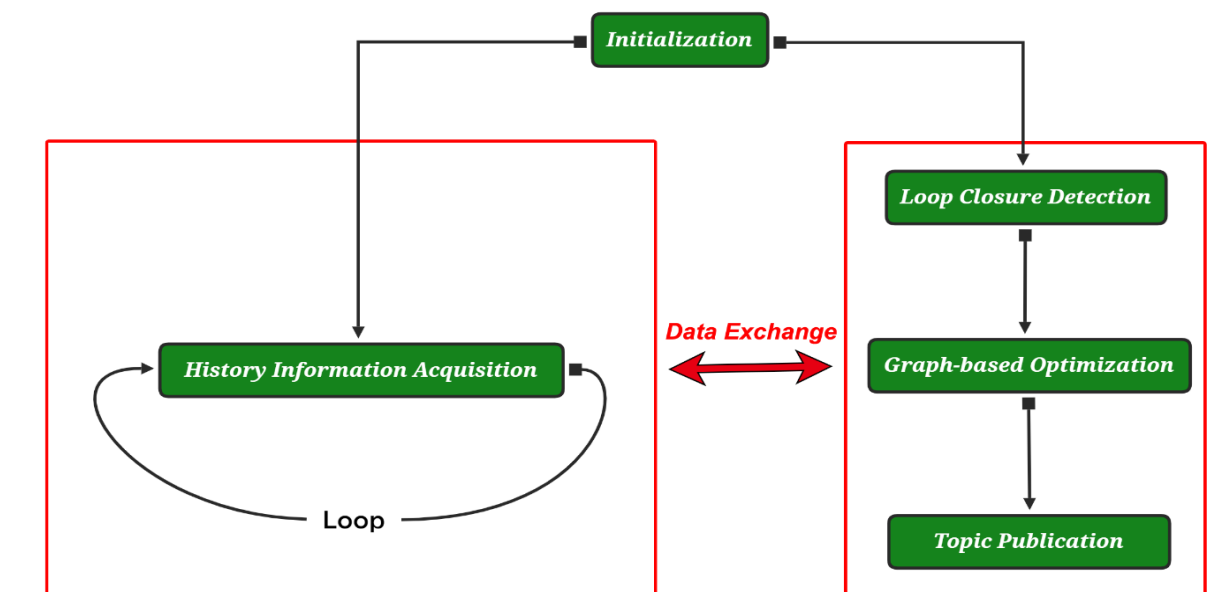
This is a fully user-oriented 3D game that aims to improve the display of maps and poses and to provide users with a more participatory experience.



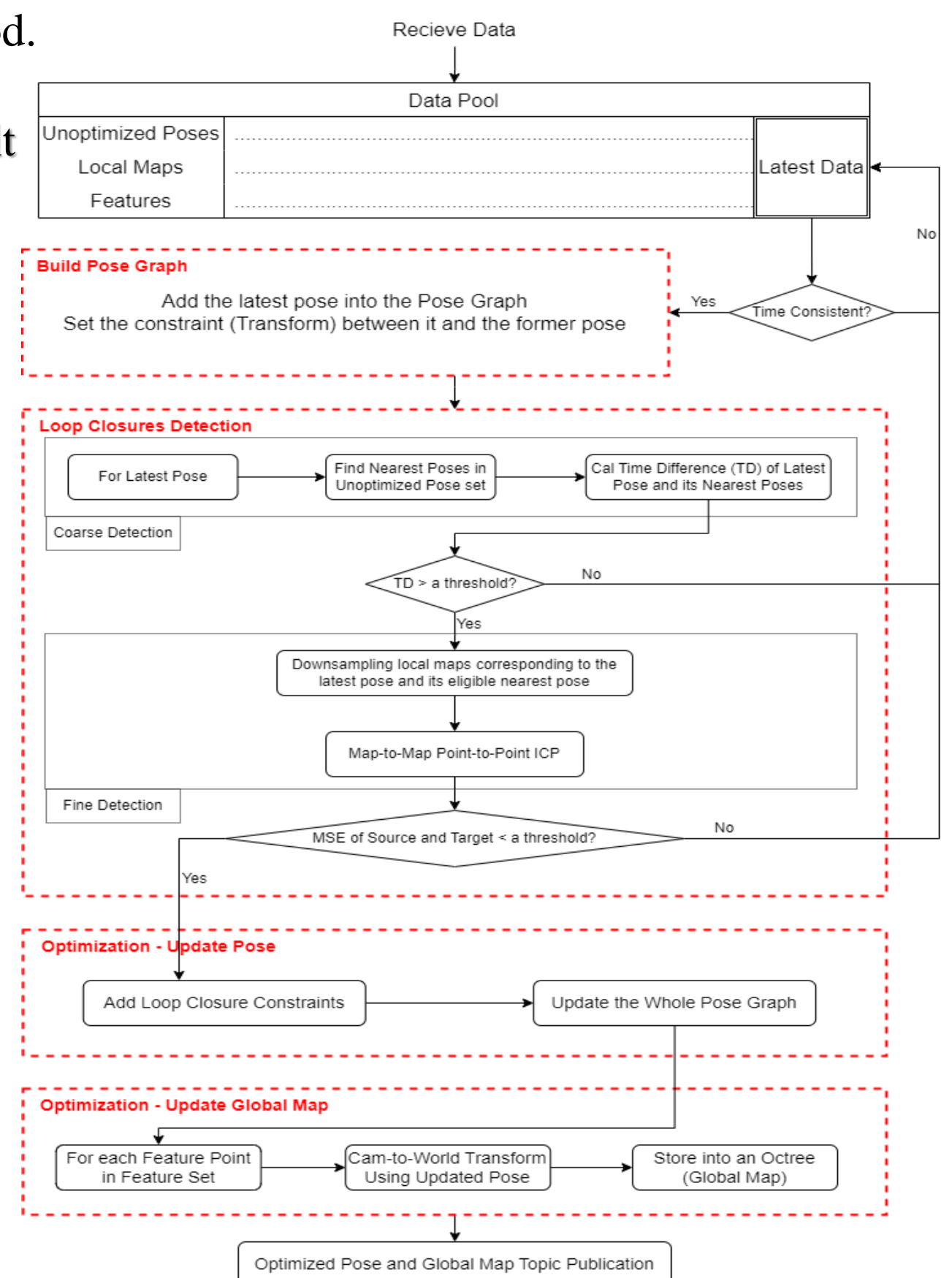
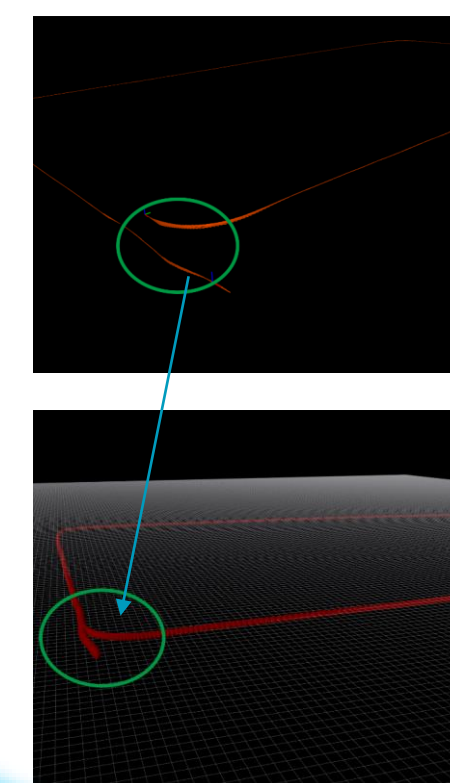
Loopback Detection and Global Optimization

Loopback Detection Detects loopbacks through comparing similarity of local maps.

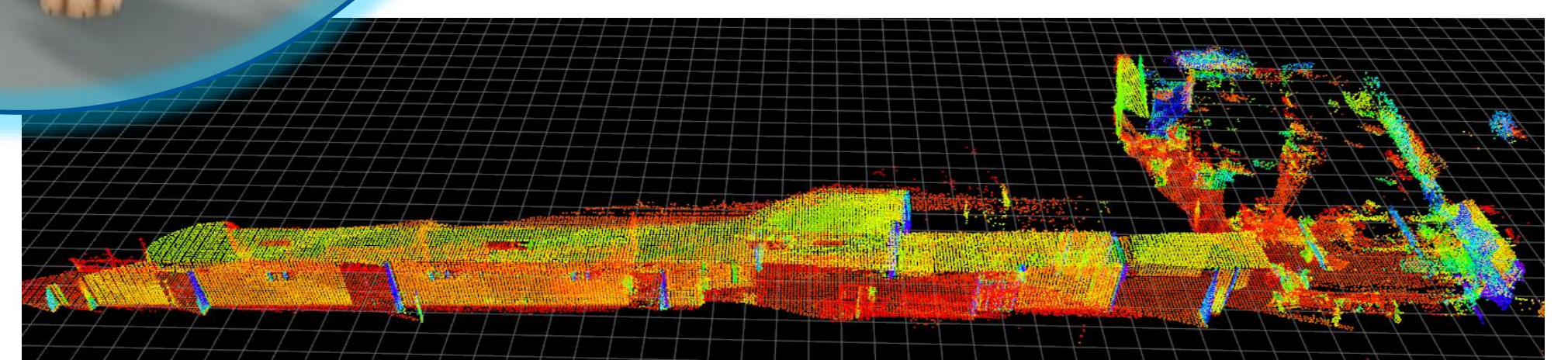
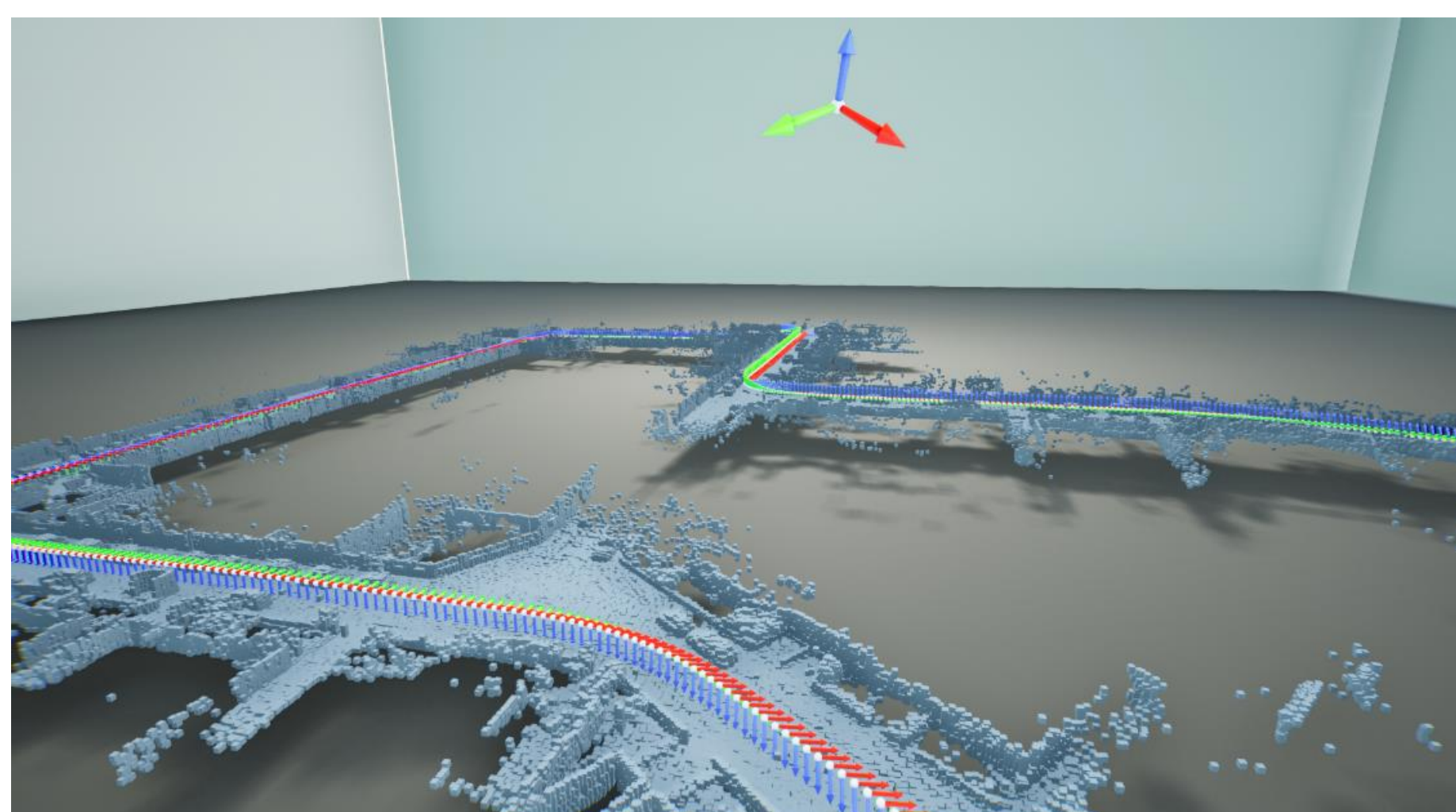
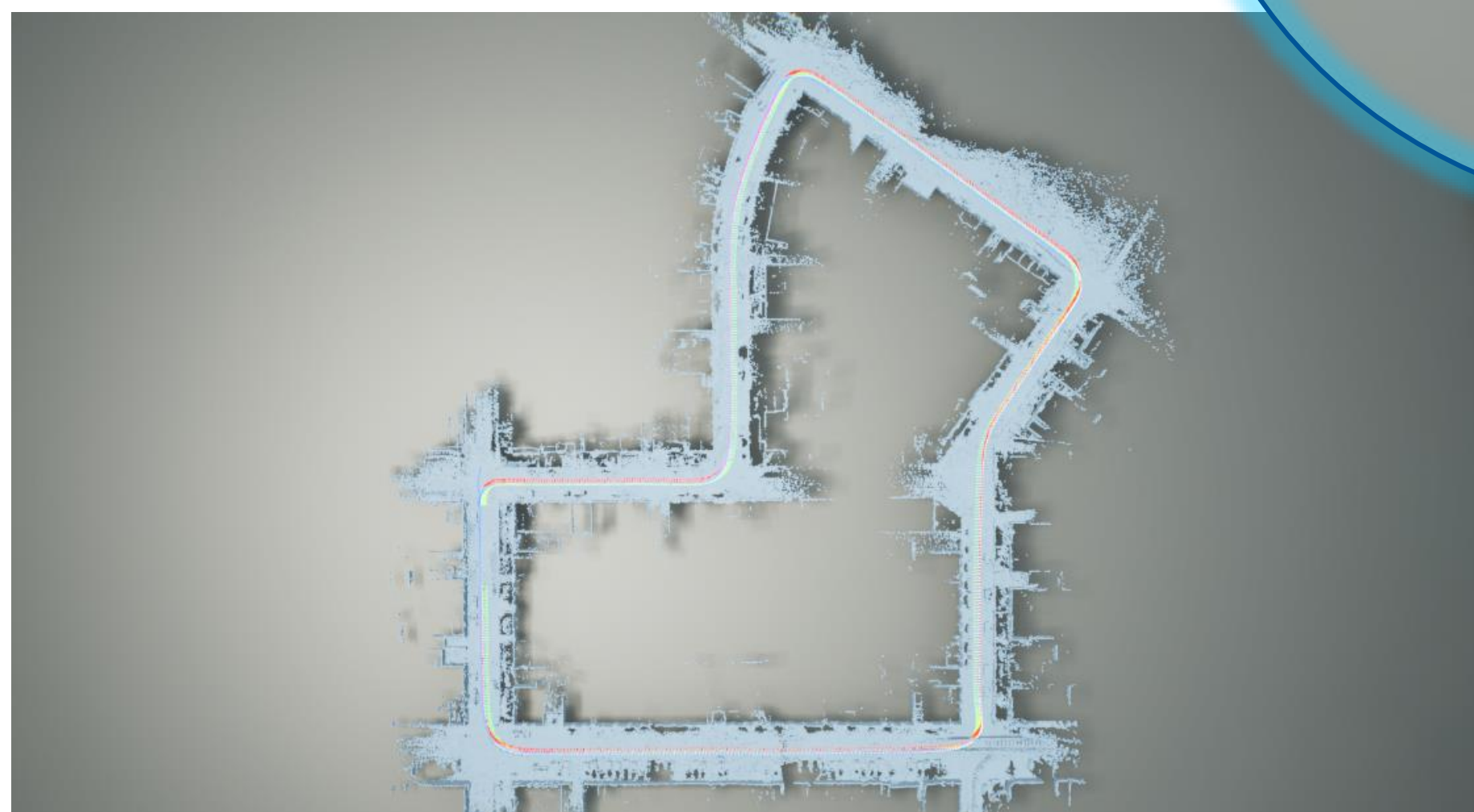
Global Optimization Update robot poses through graph-based optimization method.



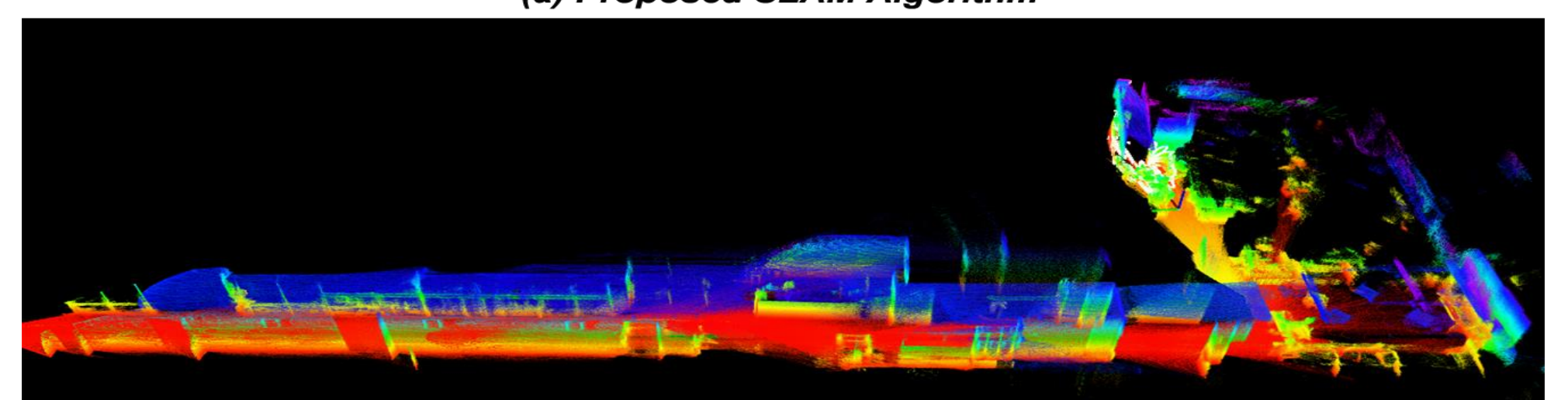
Optimization Result



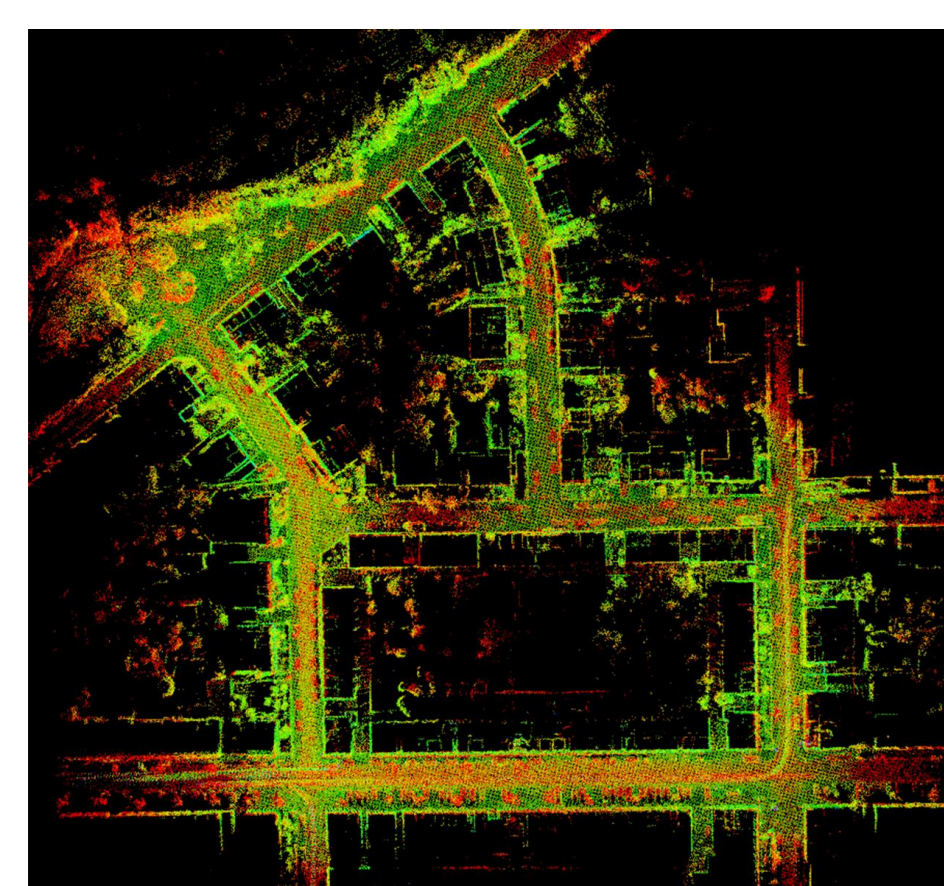
Global Maps



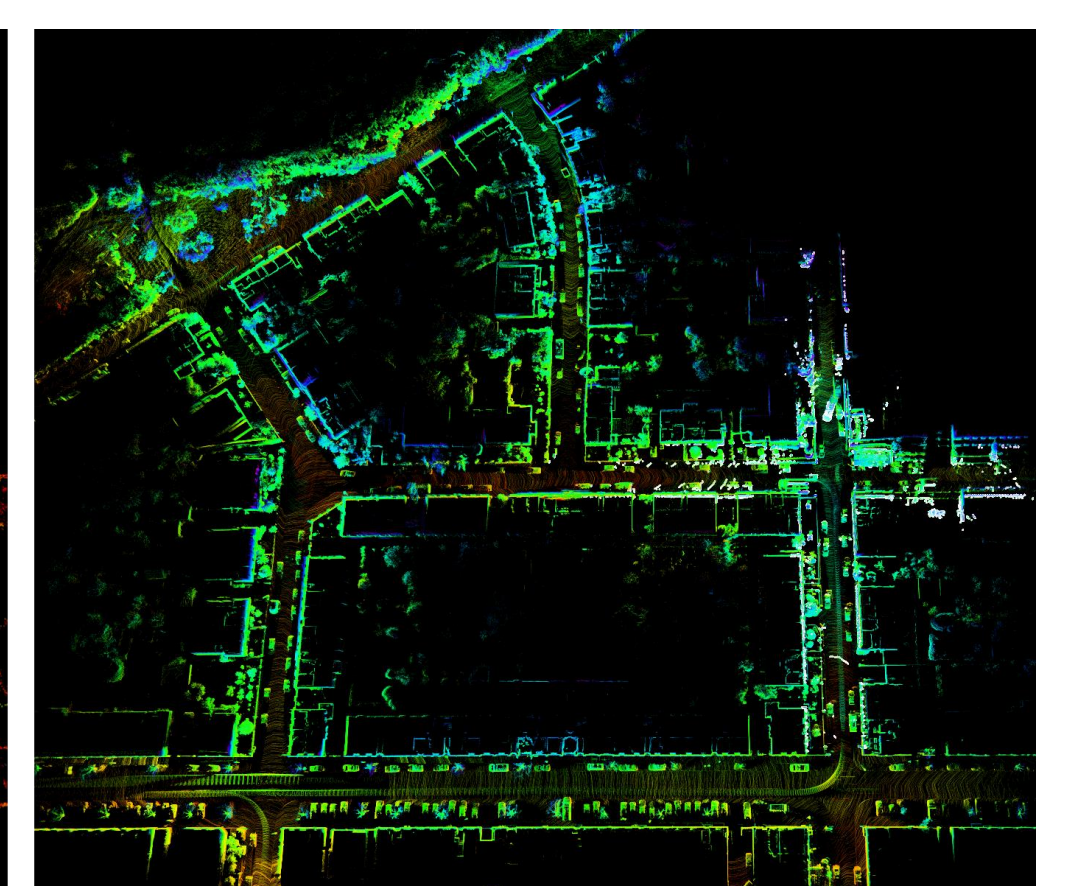
(a) Proposed SLAM Algorithm



(b) LOAM-SLAM Algorithm



(a) Proposed SLAM Algorithm



(b) LOAM-SLAM Algorithm