Registration of 3D Images
generated by an UAV

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Introduction

Mapping

Unmanned Aerial Vehicle (UAV)
6D SLAM

Features

- based on ICP
- octree based heuristic
- cached k-d tree
- captures pose in 6D

Iterative Closest Point Matching
Requirements

\[ P_{n+1} = \Delta P_{best} \cdot \Delta P \cdot P_n \]

- Octree heuristic
- Odometry extrapolation
- Previous robot pose
Requirements

\[ P_{n+1} = \underbrace{\Delta P_{\text{best}}} \cdot \underbrace{\Delta P}_{\text{odometry extrapolation}} \cdot \underbrace{P_n}_{\text{previous robot pose}} \]

- octree heuristic
- odometry extrapolation
- previous robot pose
Dead Reckoning

Intrinsic- vs. GPS-pose
Dead Reckoning

 Recorded depth map using the UAV
Conclusion

- Odometry
- GPS
- Point Cloud

6D SLAM

Recordings

Introduction

Conclusion
References

- 3D Scan Repository, "http://slam6d.sourceforge.net/".