TANDEM: Tracking and Dense Mapping in Real-time using Deep Multi-view Stereo

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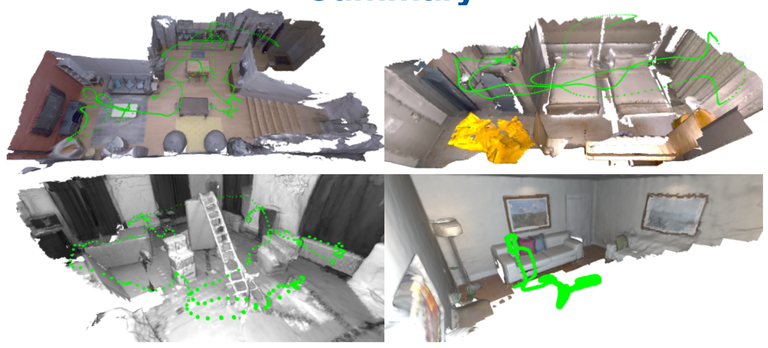
Demo Sess. 1 & 8!!

Summary

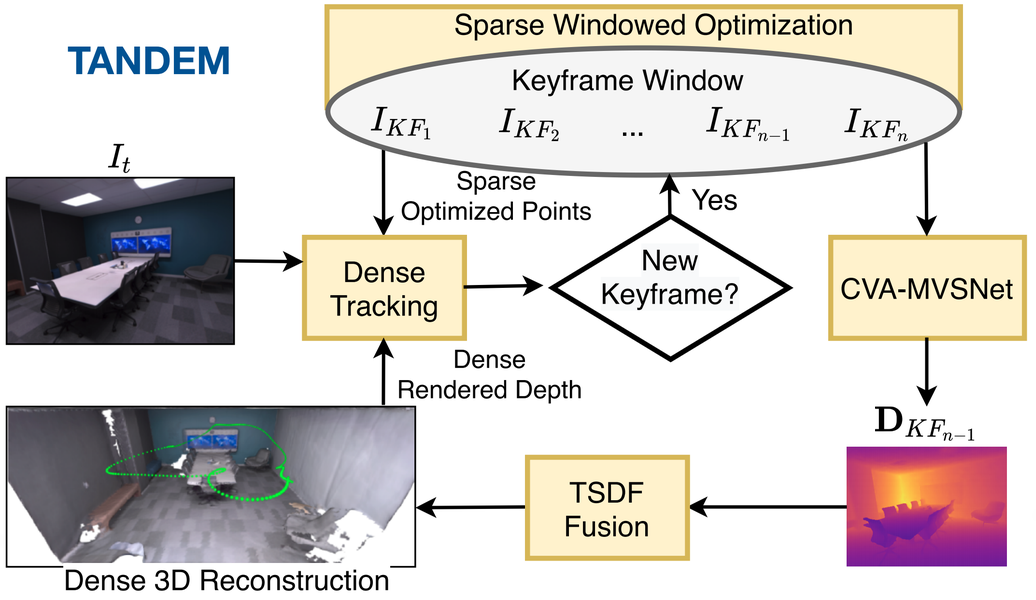


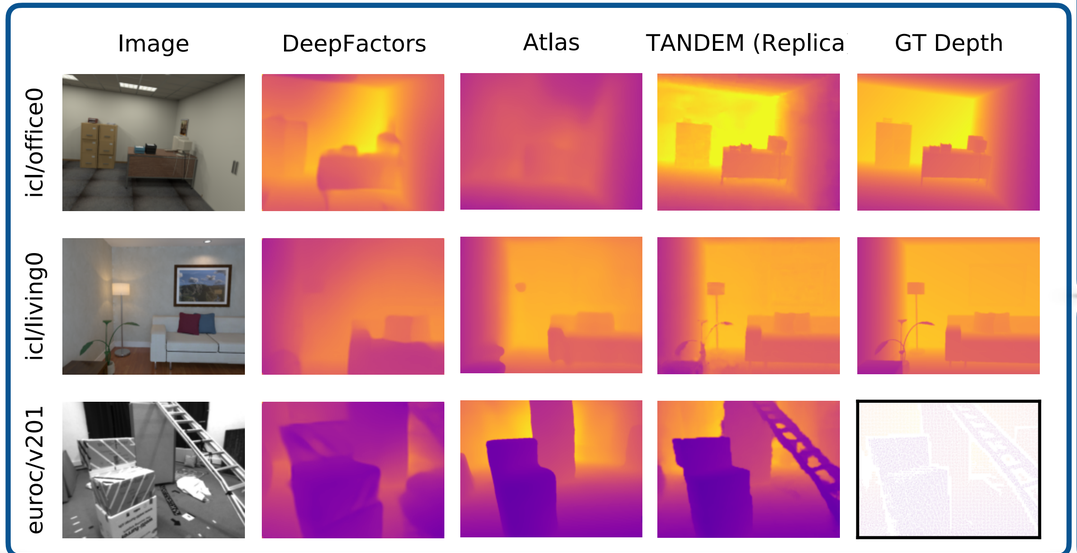
TANDEM is a real-time tracking and dense mapping framework based on dense direct tracking and Deep Multi-view Stereo.

Contributions

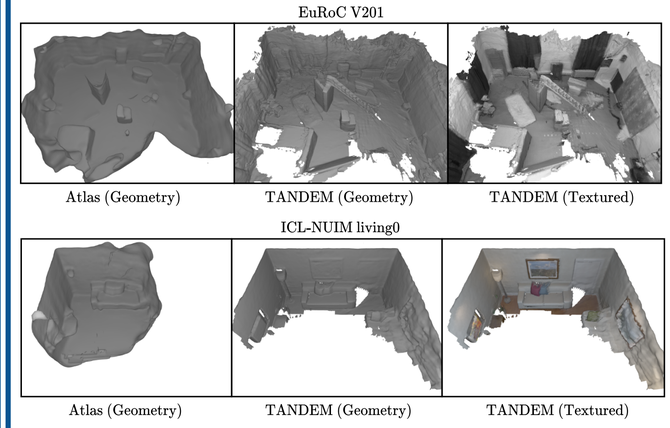
- A novel **real-time dense SLAM** coupling classical direct VO and learning-based MVS.
- The dense tracking front-end utilizes the **global TSDF model**.
- **CVA-MVSNet** that effectively leverages the entire keyframe window with view aggregation and multi-stage prediction
- We show state-of-the-art tracking and reconstruction results with strong generalization on **Replica**, **ICL-NUIM**, and **EuRoC**.

TANDEM





Reconstructions



Evaluations

Depth Estimation / d_1 [%] ↑

	CodeVIO	Atlas	TANDEM
EuRoC	78.74	76.77	**94.40**
ICL-NUIM	-	66.93	**90.71**

Pose Estimation / APE [cm] ↓

	DeepFactors	DSO	TANDEM
EuRoC	1.48	0.17	**0.12**

Code Paper Data