Robust Scale Estimation in Real-Time Monocular SFM for Autonomous Driving

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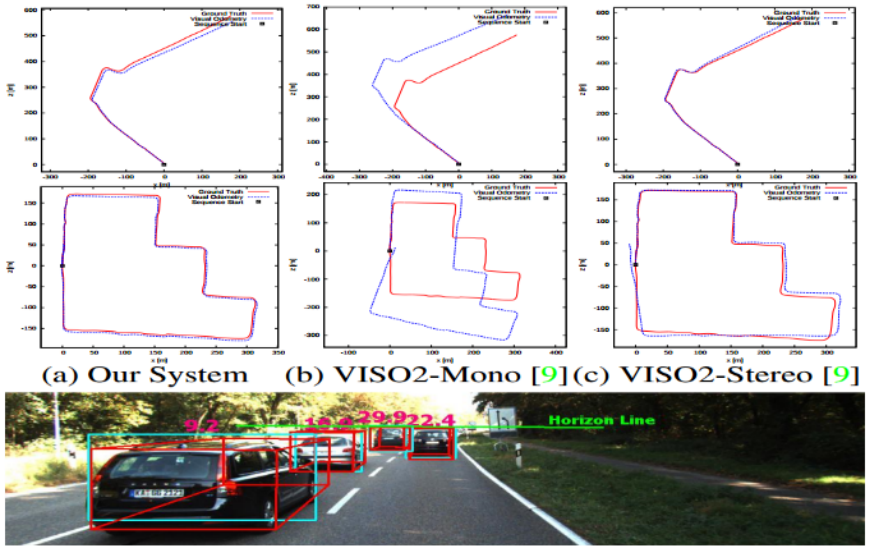

(a) Our System (b) VISO2-Mono [9] (c) VISO2-Stereo [9]

- Scale drift is a crucial challenge for monocular autonomous driving to emulate the performance of stereo
- Presents a real-time monocular SFM system that corrects for scale drift using a novel cue combination framework for ground plane estimation
- Contributions:
  - A novel data-driven framework that combines multiple cues for ground plane estimation using learned models to adaptively weight per-frame observation covariances
  - Highly accurate, robust, scale-corrected and real-time monocular SFM with performance comparable to stereo
  - Novel use of detection cues for ground estimation, which boosts 3D object localization accuracy
- Evaluates on KITTI dataset