Fast Binocular Depth Inference via Bidirectional Motion Based Interpolation

Wenjing Geng, Yang Yang, Ran Ju, Tongwei Ren and Gangshan Wu
State Key Laboratory for Novel Software Technology
Nanjing University, Nanjing, China
Motivation

- Fast and accurate depth calculation for stereo videos is difficult.
- Conducting stereo matching frame-by-frame is time consuming and the result is temporally inconsistent.

Goal: Given a stereo video, fast generate spatial-temporal consistent depth maps.

Solution

- A novel bidirectional motion-based interpolation framework is proposed to leverage the inter-frame redundancy and preserve consistency.

Experiments

- Two kinds of datasets (computer rendered and real world captured).
- Comparable to the global optimization method (from IJCV 2013) in accuracy while being much faster (1.4min. per frame with multi thread to 0.5min. per frame with single thread).