High-speed Video from Asynchronous Camera Array (Poster)

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Overview and Motivation

- Explores camera arrays for high-speed videography
- Sequentially firing each sensor in a camera array with a small time offset
- An economic solution for high-speed video capturing: using cheap normal-speed sensors
- Could flexibly exploit expensive high speed (FPS) cameras → generate videos with even higher FPS
- Better meet the demand for high data throughput from high-speed imaging than a single-sensor camera

Methodology: Framework

- Optical flow guided local warp
- Labeling-based Rendering

Methodology: Optical flow Guided Local Warp

An example of our method. The three input frames (a), including two reference frames and one source frame, are over-segmented into superpixels (SP) (b), locally warped to the target position (c), and blended using our multi-label based optimization scheme (d).

Methodology: Labeling-based Rendering

\[ E^L = E^L_{data} + \gamma L \cdot E^L_{smooth} \]

Experiment Results

Comparison to single-lens interpolation methods

HMGR fails to align the static background features. GCPW performs better, but still suffers from moderate parallax jittering.

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