Real-time Analysis and Correction of Stereoscopic HDTV Sequences

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Challenge and Scenario
- Choosing inter-axial distance
- Camera alignment avoiding vertical disparities
- Match Colour Temperatures

Approach
- Detect Point correspondences using Feature Detector
- Estimate Fundamental Matrix F
- Apply epipolar constraint and calculate extrinsic parameters
- Calculate rectifying homographies

Scene Depth Analysis

Scene Points

Disparity Histogram

Current Baseline
Optimal Baseline

Left shifted Image
Right shifted Image

Current Disparity Range
Optimal Disparity Range

Disparity Range
Zoom

Baseline
65
Motor control

Optimal Baseline
D_{opt}

Current Baseline
D_{curr}

Baseline Calculation

STAN in action
- Automatic control of optimal stereo baseline
- Adaptation of disparity range to captured scene
- Real-time correction of geo- and colorimetric distortions
- No keystone, colour mismatches and vertical disparities
- Delivery of operative metadata for 3D post-production
- On-site calculation of scene depth
- Visualization tool for evaluating stereo quality
- Avoidance of eye-strain, headache and visual fatigue

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