Introduction

Motivation
Filming in 3D has gained a tremendous momentum. The use of two cameras rigged side by side instead of one has brought a number of challenges to film production. The movie industry has been actively looking at adjusting the tools of its traditional production pipeline to make shooting 3D movies no more complicated than shooting in 2D.

Goal
The diagnostic tool set is an assistance system for stereoscopic 3D movie production. It automatically monitors several aspects of camera setup to assist camera crews to prevent avoidable mistakes.

Stereoscopic distortion
The different distortion for the stereoscopic images, not only reduces the 3D effect, but also can cause the viewer uncomfortable to enjoy the 3D movie. The setup of both cameras must be synchronized.

Methodology

Image correspond keypoint
Based on David Lowe’s SIFT algorithm. Detect and location the feature keypoints of the stereoscopic image pair.

Colour difference
For each keypoint pair measure the colour Difference with histogram intersection.

Camera horizontal level
Check the median value of the angle made by the keypoint pairs.

Aperture difference
Compare the local average gradient norm for each keypoint pair, check the median value of all absolute differences.

Results

<table>
<thead>
<tr>
<th></th>
<th>Accuracy</th>
<th>Mis-classification Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Colour difference</td>
<td>85%</td>
<td>15%</td>
</tr>
<tr>
<td>Camera horizontal</td>
<td>81.6%</td>
<td>18.4%</td>
</tr>
<tr>
<td>Aperture difference</td>
<td>82.5%</td>
<td>17.5%</td>
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Conclusion
Monitoring 3D filming is crucial, with the real time feel back of the diagnostic tool, it would be a great help for the camera crew to prevent even unnoticeable problem.

Further Information
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