

Optical Flow Estimation With Horn-Schunck Method

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ECPE 124 - Digital Image Processing

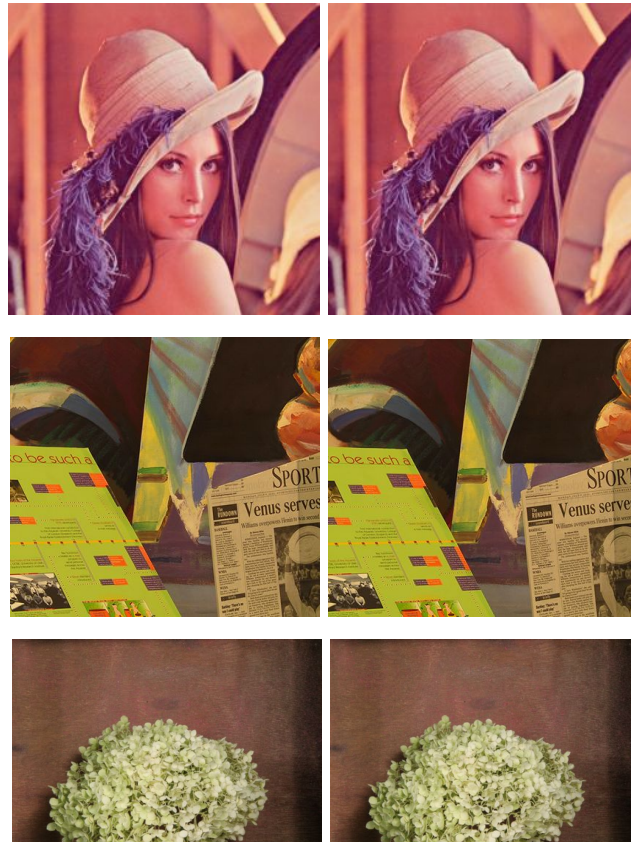
Problem Statement:

Detecting motion in an image cannot be done by looking at just one pixel, and sometimes not even with a large group of pixels. This is called the aperture problem. To overcome this, we must first assume the optical flow is smooth throughout the entire image. The Horn-Schunck method relies upon this assumption, minimizing distortions and preferring smoothed results.

Implementation:

- Compute direction of brightness gradient
- Compute Laplacian of flow velocities u and v
- Minimize magnitude of gradient and flow velocity
- Estimate partial derivatives of image brightness i , j , and k direction
- Minimize sum of errors for change of image brightness and velocity
- Gauss-Seidal method
- Filling in uniform regions

Data set used for testing:



Expected Results:

The Horn-Schunck method produces flow patterns corresponding to the change in motion in the image.

GANNT Chart:



Untitled

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