[Algorithms Overview]

Theory

The optic flow algorithm proposes by Srinivasan uses a reference image f_0 and shifted and rotated instances of the reference image f_1, f_2, f_3, f_4, f_5, f_6. It is assumed that the input image f can be interpolated as a linear combination of f_0 ... f_6. The motion from the input image to the reference image is found by determining the parameters of this linear combination giving a rotation and a translation. The solution is found by the least squares estimate

$$\min (f - (f_0 + 0.5\, u\, (f_2 - f_1) + 0.5\, v\, (f_4 - f_3) + 0.5\, r\, (f_6 - f_5)))^2$$

Srinivasan, M. V. (1994). An image-interpolation technique for the computation of optic flow and egomotion. Biological Cybernetics, 71(5), 401–415.

Algorithm

The sample implementation written in C can be found at

visual_processing/optic_flow/Srinivasan.cpp

The presented implementation uses fixed shift and rotation values. The mapping for the computation of the rotated images is precomputed during initialization of the method.