

# Implementation of Differential Optical Flow Algorithms in Natural Rigid Video Motion

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*Abstract*— Computing the optical flow of a sequence of images still remains a challenge in low-level video processing. Till present, none of the existing techniques has sufficiently generated accurate and dense optical flow fields to robustly represent video motion. In this paper we implement the optical flow algorithms through different lengths of displacements that exist in video motion of natural objects. We investigate the outcome of the differential optical flow algorithms based on Lukas-Kanade, Horn-Schunck and Brox's warping techniques. Experiments on natural images show that the warping technique produces smoother and consistent pattern of optical flow compared to the outputs of Lukas-Kanade and Horn-Schunck. The behaviors of optical flow fields for each algorithm can be observed accordingly with respect to their displacements.

*Index Terms*— Optical flow, Horn-Schunck algorithm, Lukas-Kanade algorithm, warping technique.