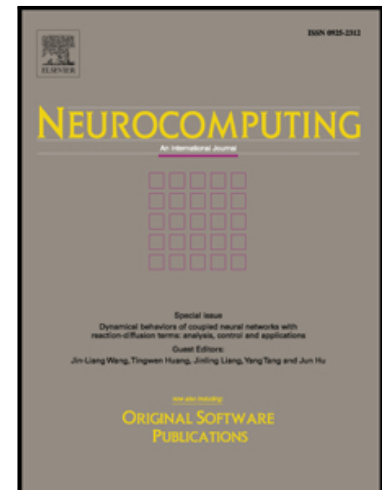


Accepted Manuscript

SIFT flow for abrupt motion tracking via adaptive samples selection with sparse representation

Huanlong Zhang, Yanfeng Wang, Lingkun Luo, Xiankai Lu, Miaohui Zhang

PII: S0925-2312(17)30694-X
DOI: [10.1016/j.neucom.2017.04.024](https://doi.org/10.1016/j.neucom.2017.04.024)
Reference: NEUCOM 18357



To appear in: *Neurocomputing*

Received date: 13 June 2014
Revised date: 12 March 2017
Accepted date: 5 April 2017

Please cite this article as: Huanlong Zhang, Yanfeng Wang, Lingkun Luo, Xiankai Lu, Miaohui Zhang, SIFT flow for abrupt motion tracking via adaptive samples selection with sparse representation, *Neurocomputing* (2017), doi: [10.1016/j.neucom.2017.04.024](https://doi.org/10.1016/j.neucom.2017.04.024)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

SIFT flow for abrupt motion tracking via adaptive samples selection with sparse representation

Huanlong Zhang^{a,*}, Yanfeng Wang^a, Lingkun Luo^b, Xiankai Lu^c, Miaohui Zhang^d

^aCollege of electric and information engineering, Zhengzhou University of Light Industry, Zhengzhou, 450002

^bSchool of Aeronautics and Astronautics, Shanghai Jiao Tong University, Shanghai 200240 China

^cSchool of Electronics, Information and Electrical Engineering, Shanghai Jiao Tong University, Shanghai 200240 China

^dInstitute of Image Processing and Pattern Recognition, Henan University, Kaifeng 475001, China

Abstract

Abrupt motions commonly cause conventional tracking methods to fail because they violate the motion smoothness constraint. To overcome this problem, we propose a novel SIFT flow tracker (SFT) and integrate it into a sparse representation-based tracking framework. In this method, we firstly introduce SIFT flow method to address the tracking problem. The method can avoid the local-trap modes and cope with abrupt motion without any prior knowledge. Then, for obtaining the effective samples, we design a new hybrid sampling mechanism, which can sample the local and global predicted location according to confidence map. Finally, to adapt the target appearance variations, especially to partial occlusion, we embed SFT to L1 tracker and construct a unified framework to track both smooth and abrupt motion in time. Compared with several state-of-art tracking algorithms, experimental results demonstrate that our method achieves favorable performance in handling abrupt motion, even under target appearance variations including illumination changes, partial occlusion and pose changes.

Keywords: Visual tracking; Abrupt motion; SIFT flow tracking; Belief propagation ; Sparse representation

1. Introduction

In recent years, visual tracking has received a great deal of attention in computer vision due to its success in many real-world applications such as visual surveillance, human computer interaction, and medical imaging. Although

*Corresponding author: zhl_lit@163.com

Download English Version:

<https://daneshyari.com/en/article/4947479>

Download Persian Version:

<https://daneshyari.com/article/4947479>

[Daneshyari.com](https://daneshyari.com)