

Accepted Manuscript

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PII: S0262-8856(17)30189-0
DOI: doi:[10.1016/j.imavis.2017.12.003](https://doi.org/10.1016/j.imavis.2017.12.003)
Reference: IMAVIS 3665

To appear in: *Image and Vision Computing*

Received date: 18 July 2016
Revised date: 20 September 2017
Accepted date: 8 December 2017



Please cite this article as: Meng Meng, Hassen Drira, Jacques Boonaert, Distances evolution analysis for online and off-line human object interaction recognition, *Image and Vision Computing* (2017), doi:[10.1016/j.imavis.2017.12.003](https://doi.org/10.1016/j.imavis.2017.12.003)

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Distances evolution analysis for online and off-line human object interaction recognition

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Abstract

Human action recognition in 3D sequences is one of the most challenging and active areas of research in the computer vision domain. However designing automatic systems that are robust to significant variability due to object combinations and high complexity of human motions are more challenging in addition to the typical requirements such as rotation, translation, and scale invariance is challenging task. In this paper, we propose a spatio-temporal modeling of human-object interaction videos for on-line and off-line recognition. The inter joint distances and the object are considered as low-level features for online classification. For off-line recognition, we propose rate-invariant classification of full video and early recognition. A shape analysis of trajectories of the inter-joint and object-joints distances is proposed for this end. The experiments conducted following state-of-the-art settings using MSR Daily Activity 3D Dataset and On-line RGBD Action Dataset and on a new Multi-view dataset for human object interaction demonstrate that the proposed approach is effective and discriminative for human object interaction classification as demonstrated here.

Keywords: Human object interaction, rate invariance, shape analysis, temporal modeling.

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