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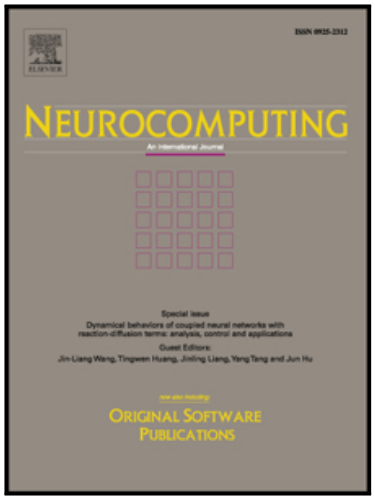


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# A Structured Multi-Feature Representation for Recognizing Human Action and Interaction

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**Abstract**

Active research has been carried out for human action recognition using 3D human skeleton joints with the release of cost-efficient RGB-D sensors. However, extracting discriminative features from noisy skeleton sequences to effectively distinguish various human action or interaction categories still remains challenging. This paper proposes a structured multi-feature representation for human action and interaction recognition. Specifically, a novel kernel enhanced bag of semantic words (BSW) is designed to represent the dynamic property of skeleton trajectories. By aggregating BSW with the geometric feature, a GBSW representation is constructed for human action recognition. For human interaction recognition where the cooperation of each subject matters, a GBSWC representation is proposed via combining the GBSW feature with a correlation feature which addresses the intrinsic relationship between interactive persons. Experimental results on several human action and interaction datasets demonstrate the superior performances of the proposed features over the state-of-the-art methods.

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