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2nd Global Summit and Expo on **Multimedia & Applications** August 15-16, 2016 London, UK

Complex event detection via bank based multimedia representation

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long with the advent of big data era, available multimedia collections are expanding. To meet increasingly diversified Λ demands of multimedia applications from the public, effective multimedia analysis approaches are required urgently. Multimedia event detection, as an emerging branch in multimedia analysis, is gaining considerable attention from both industrial and academic researchers. However, much current effort on multimedia event detection has been dedicate to detecting complex events in controlled video clips or simple events in uncontrolled video clips. In order to perform complex event detection tasks in uncontrolled video clips, we propose an event bank descriptor approach, which has been published in the journal of Neurocomputing, for multimedia representation. The approach divides spatial temporal objects of an event into objects described by a latent group logistic regression mixture model trained on a large number of labeled images which can be obtained very easily from standard image datasets, and spatial temporal relationships described by spatial temporal grids trained on a relatively small number of labeled videos which can be also obtained very easily from standard video datasets. Furthermore, we combine the coordinate descent approach and the gradient descent approach to develop an efficient iterative training algorithm to learn model parameters in the event bank descriptor, and conduct extensive experiments on the ImageNet challenge 2012 dataset and the TRECVID MED 2012 dataset. The results showed that the proposed approach outperformed state-of-the-art approaches for complex event detection in uncontrolled video clips. The benefits of our approach are mainly threefold: Firstly, outliers in training examples are removed. Secondly, subtle structural variations are allowed for detection. Thirdly, feature vectors of event bank are jointly sparse.

Biography

Changyu Liu received hid PhD degree in 2015 from South China University of Technology, where he worked under the supervision of Prof. Shoubin Dong. He is currently a Lecturer at the College of Mathematics and Informatics, South China Agricultural University. He was a visiting scholar at the School of Computer Science, Carnegie Mellon University, from September 2012 to October 2013, advised by Dr. Alex Hauptmann. Then, he worked with Prof. Mohamed Abdel-Mottaleb and Prof. Mei-Ling Shyu at the Department of Electrical and Computer Engineering, University of Miami, from October 2013 to September 2014. He serves as a reviewer for many international journals, such as *Neural Computing and Applications, Security and Communication Networks, KSII Transactions on Internet and Information Systems, Journal of Computer Networks and Communications, and Tumor Biology.* He is a Technical Program Committee member for many international conferences, such as GMEE2016, PEEM2016, and ICEMIE2016. His research interests include computer vision, pattern recognition, multimedia analysis, bioinformatics, virtual reality, and machine learning.

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