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Einladung zum Vortrag

Robust Visual Tracking using an Adaptive Coupled-layer Visual Model

von

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ABSTRACT

In this talk I will address the problem of tracking objects which undergo rapid and significant appearance changes. Ill describe a novel coupled-layer visual model that combines the target's global and local appearance by interlacing two layers. The local layer in this model is a set of local patches that geometrically constrain the changes in the target's appearance. This layer probabilistically adapts to the target's geometric deformation, while its structure is updated by removing outdated patches and adding new ones. The addition of these patches is constrained by the global layer that probabilistically models target's global visual properties such as color, shape and apparent local motion. The global visual properties are updated during tracking using the stable patches from the local layer. By this coupled constraint paradigm between the adaptation of the global and the local layer, we achieve a more robust tracking through significant appearance changes. We experimentally compare our tracker to eleven state-of-the-art trackers on challenging sequences. The results of these experiments confirm that our tracker outperforms the related trackers in many cases by having smaller failure rate as well as better accuracy. Furthermore, the parameter analysis shows that our tracker is stable over a range of parameter values.

BIOGRAPHICAL INFORMATION

Ales Leonardis is a Chair of Robotics and a Co-director of the Centre for Computational Neuroscience and Cognitive Robotics at the University of Birmingham. He is also a full professor at the University of Ljubljana and an adjunct professor at the Faculty of Computer Science, Graz University of Technology. His research interests include robust and adaptive methods for computer vision, object and scene recognition and categorization, statistical visual learning, 3D object modeling, and biologically motivated vision. He has been an associate editor of the IEEE Transactions on Pattern Analysis and Machine Intelligence, an editorial board member of Pattern Recognition, and an editor of the Springer book series Computational Imaging and Vision. He was also a program cochair of the European Conference on Computer Vision 2006. In 2002, he coauthored a paper, Multiple Eigenspaces, which won the 29th Annual Pattern Recognition Society award.

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