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Multiple-cue-based visual object contour tracking with incremental learning.

Pan, Zhigeng (ed.) et al., Transactions on Edutainment IX. Berlin: Springer (ISBN 978-3-642-37041-0/pbk). Lecture Notes in Computer Science 7544. Journal Subline, 225-243 (2013).

Summary: This paper proposes a visual object contour tracking algorithm using a multi-cue fusion particle filter. A novel contour evolution energy is proposed which integrates an incrementally learnt model of object appearance with a parametric snake model. This energy function is combined with a mixed cascade particle filter tracking algorithm which fuses multiple observation models for object contour tracking. Bending energy due to contour evolution is modelled using a thin plate spline (TPS). Multiple order graph matching is performed between contours in consecutive frames. Both of the above are taken as observation models for contour deformation; these models are fused efficiently using a mixed cascade sampling process. The dynamic model used in our tracking method is further improved by the use of optical flow. Experiments on real videos show that our approach provides high performance object contour tracking.

Classification: R40 P20 P50 R80

Keywords: tracking; snake model; particle filter; mixed cascade
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