

Human Pose Refinement via Contextual Rescoring

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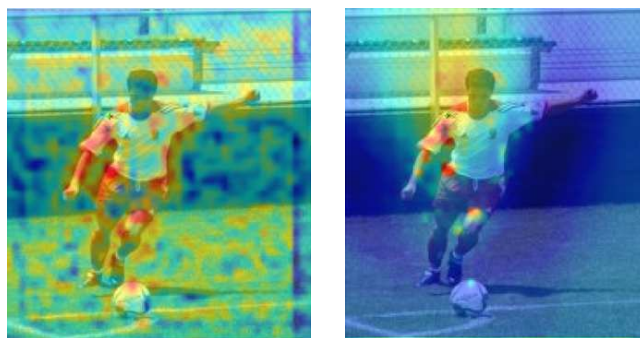
1 Summary of Previous and Current Work

During this year I have continued working in the contextual rescoring for human pose estimation. The aim of this work is to obtain “cleaner” score maps when detecting body parts in a Pictorial Structure (PS) framework (see Figure 1). This contextual rescoring methodology is built on a mid-level representation based on high level part detections, i.e. upper body, lower body or full body. More specifically, we extract spatial and score-related relationships between body part detections in the PS model and the ones from the mid-level representation.

As a novelty, I have defined a better mid-level image representation based on Poselets, and a method for selecting a subset of them such that maximize precision and cover the range of poses in a validation set. Moreover, I have included and tested this contextual rescoring methodology in the human pose estimation frameworks of [1] and [2], yielding improvements in the PCP. It is important to note also that we achieve a better performance than [2] while reducing the number of Poselets by an order of magnitude in comparison with their method. This work is currently under review.

2 Future Work and Challenges

As an improvement, we could extend the set of contextual relational features by introducing the relative angle between detections. It would be also really interesting to test this methodology in a new human pose benchmark, recently proposed in CVPR 2014.



(a)

(b)

Figure 1: (a) Original score map for the leftmost shoulder. (b) Refined score map, output from the contextual rescoring.

References

- [1] Y. Yang, D. Ramanan, “Articulated Human Detection with Flexible Mixtures of Parts”. In *PAMI*, Dec. 2013.
- [2] L. Pishchulin et al., “Strong Appearance and Expressive Spatial Models for Human Pose Estimation”. In *ICCV*, Dec. 2013.



Antonio Hernández-Vela received the B.S. degree in computer science and the M.S. degree in computer vision and artificial intelligence, both from the Universitat Autònoma de Barcelona (UAB), in 2009 and 2010, respectively. He is currently working toward the P.h.D. degree in mathematics on human pose recovery and behavior analysis at the Universitat de Barcelona. His main research interests include human pose recovery, gesture recognition and behavior analysis.