

How to rank for person re-identification

Christian Micheloni

*Dept. Mathematics, Computer Science and Physics ,University of Udine, Udine, Italy
e-mail: christian.micheloni@uniud.it*

Abstract. The recent advancement and the reduced costs for image sensors have remarkably increased the adoption of video analytics systems for various applications ranging from home to border surveillance. When, for different reasons, only a small portion of the area of interest is monitored by cameras the blind spots generated by the non-overlapping fields-of-view (FoVs) are critical issues. Long term target tracking largely suffers from this problem. This raises the need for methods able to link the information acquired between the covered areas such that high-level semantics can be obtained. Concerning the long term target tracking, solving the problem of re-associating a same person that is moving in a wide environment and who might be detected at a different location and time is a key task. This is known as the person re-identification problem.

Recently, the scientific community is approaching the aforementioned issues by proposing different solutions based on: (i) discriminative signatures [1], (ii) feature transformations [2] and (iii) metric learning [3]. These approaches use similar pipelines to solve the stated issues, but they differ from how the person visual appearance is modeled and/or how the match is computed. All such solutions treat the re-identification problem as a ranking problem. As for information retrieval, the result is generated as a ranking list of the most probable matching persons ordered on the basis of a confidence measure.

The proposed talk will investigate the most recent advances in term of ranking for person re-identification exploring all the three major approaches. In addition, a first introduction to the post-ranking optimization [4] to improve the performance as well as a network based approach [5] will be provided.

The discussion will end with a critic analysis of the current approaches to provide possible improvements to be implemented in the experimental protocols as well as methodologies to more efficiently solve the re-identification problem for video analytics purposes.

References

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