Real time cross camera people tracking

Background

When doing video surveillance of a large building it is often of interest to know how people have been moving around. If for instance some suspicious behavior is observed, it might be interesting to know how the person entered the building, how he got to the place where he is now, who he has talked to on the way and so on. With this information, the guard can better evaluate whether action needs to be taken on the suspicious behavior or not. Tracking people like this manually is not easy. When a person leaves the field of view of one camera, it is often not obvious what camera he might reappear on next. Instead, it would be much better if the video surveillance system could track people cross cameras and automatically on request show how one person has moved around in the building.

What is needed here is not object tracking. How a person moves around within the field of view is not interesting as such. Instead, it is interesting to track when an object appears and disappears from the field of view and on top of this make the connection between different cameras. So for example, if a person leaves the field of view by entering a door, the system should somehow be looking for the same person to reappear in the field of view of other cameras and then make the connection. It is okay to configure the system in such a way that it knows that objects leaving a specific camera through for example a door can only reappear on a specific other camera that has the same door within the field of view just from the other side.

The project

In this project, we want to investigate how to make an algorithm that can track people across different cameras. The output of the algorithm should be some metadata describing how people have been moving around. It is also interesting to consider how this information is best provided to the user.

Performance of the algorithm is critical since it needs to run on all video feeds provided by cameras.

It is expected that a standalone prototype of the proposed algorithm is implemented that shows how people can be tracked. An analysis of how robust the algorithm is and how it performs is also expected.

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