

Multi-modal Person Re-identification

Bachelor Thesis / Seminar Project / Master Thesis



Description:

Recognizing persons and analyzing their behavior from video data is one of the major challenges in visual data analysis. On the one hand, public video surveillance requires to automatically analyze increasing amounts of data, raising the need for efficient approaches. On the other hand, also modern (smart) homes bring up new tasks and challenges: identifying visitors at the door, fall detection (elderly people), or surveillance of children. Even though this task is very challenging (e.g., the appearance of an individual can vary extremely due to changing view points, illumination, or different poses) typically only one kind of information (appearance, motion, etc.) is used to describe persons and their activities. Thus, the goal of this project is to take advantage of multiple cues in parallel (faces, physical proportions, gait, activity recognition, etc.) to identify single persons. Mainly focusing on the smart home scenario tasks of different granularity should be addressed: (a) distinguishing known vs. unknown persons, (b) discriminate members of groups: adult vs. child, male vs. female, etc., and (c) recognize and identify individuals. The goal of the project is to evaluate which descriptions and methods are meaningful in practice, how the training effort for such a system can be minimized, and how well such approaches would generalize to different setups (location, camera viewpoint, different persons)? The project is also triggered by industrial interests and thus of highly practical value!

Objective:

- Review literature on object and activity recognition
- Implement and test algorithms
- Apply methods for real-world, industrial applications (optionally)

Qualifications:

- Experience in Matlab, C++, Python
- Interest in Machine Learning (e.g., Deep Learning, SVM, etc.)
- (Interest in GPU programming)
- Interest in industrial applications

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