



Socially Intelligent Surveillance and Monitoring

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Abstract

Video surveillance and monitoring is a well explored applicative field of computer vision and pattern recognition domains, which is nowadays becoming increasingly important in both scientific and social perspectives.

So far, the literature was mainly focused on low-level information extraction for scene understanding, in which the main video processing methods aimed at modeling the background information, detecting and tracking objects and persons, or analyse object/scene motion in general. Typically, a tracking-and-classify paradigm is pursued: for instance, object trajectories are collected so as to identify normal classes of behavior, which are subsequently used to figure out if an abnormal behavior occurs.

Recently, the work moved on to analyze and understand real behavior of people in unconstrained settings, and the necessity to go beyond the above paradigm has been realized, trying to integrate social/psychological findings in the computational algorithms. Actually, the next generation of video surveillance systems must take into account studies in social sciences to model and understand human behavior in several scenarios.

This lecture aims at describing how social cues can be used to build robust and effective automatic system for human behavior analysis. In particular, bodily movements and gestures, the use of surrounding space (proxemics), face expressions, head movements and gazing, vocal behavior area all traits of nonverbal behavior which are studied by social sciences and can be exploited to better figure out situations of social interest.

Starting from these premises, I will present work for robust pedestrian detection, head pose classification, re-identification and tracking which are at the bases of the socially intelligent surveillance.

Syllabus: video surveillance, social signal processing, nonverbal behavior, interactions analysis, tracking, pedestrian detection, re-identification.