Human Action Recognition

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Abstract

Automatic recognition of human actions is a growing research topic urged by demands from emerging industries including (i) indexing of professional and user-generated video archives, (ii) automatic video surveillance, and (iii) human-computer interaction. Most applications require action recognition to operate reliably in diverse and realistic video settings. This lecture will address the challenge of action recognition from multiple perspectives. The first part of the lecture will motivate the problem by a short historical overview and examples of modern applications. We will next review human-centric methods aiming at action recognition in still images based on human pose estimation, person-object interactions and scene context. The third part will address action recognition in video and will include review of early and and more recent motion descriptors, spatio-temporal models of actions as well as weakly-supervised methods for action learning. Throughout the lecture we will discuss multiple benchmark datasets and performance evaluation of different methods. We will finish with an overview of long-standing challenges and the next promising steps in action recognition.

Syllabus: action recognition, motion analysis, weakly-supervised learning