

HUMAN ACTION RECOGNITION

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Automatic recognition of human actions and gestures is a growing topic of computer vision. Solving this problem is essential for a number of emerging industries including (i) indexing of professional and user-generated video archives, (ii) automatic video surveillance, and (iii) human-computer interaction. The field of human action recognition has evolved considerably over the recent years. Recently introduced local video representations are now used extensively in combination with statistical recognition methods. At the same time, new powerful structural methods have emerged, presenting solutions to action recognition based on recent advances in structured output learning. This lecture will give an introduction into novel trends in statistical and structural action recognition and will illustrate ideas with examples of successful methods from recent literature. The lecture will cover the following list topics:

1. Introduction
 - a. Human actions in science and applications
 - b. Historical overview
2. Statistical methods
 - a. Local video representations
 - b. Bag-of-features models and supervised action recognition
 - c. Performance evaluation
 - d. Unsupervised and weakly-supervised methods
 - e. Extensions
3. Structural methods
 - a. Template-based methods
 - b. Human pose estimation and pose retrieval
 - c. Generative methods
 - d. Discriminative methods