

# Chapter 1

## Related work

First approaches for action classification consisted of 2 steps a) compute complex handcrafted features from raw video frames such as SIFT, HOG, optical flow and b) train a classifier based on those features. These approaches made the choice of features a significant factor for network's performance. That's because different action classes may appear dramatically different in terms of their appearances and motion patterns. Another problem was that most of those approaches take assumptions about the circumstances under which the video was taken because there were problems such as cluttered background, camera viewpoint variations etc.

Recent results in deep architectures and especially in image classification made us attempt to train CNN networks for the task of action classification and localization. As mentioned before, Action Localization can be seen as an extension of object detection problem, where the outputs are action tubes that consist of a sequence of bounding boxes. So, there are several approaches including an object-detector network for single frame action proposal and a classifier. [3] uses a 2-stream R-CNN [2] in order to generate action proposals for each frame. [6] NA DW TI KANEI.

[1] uses SSD

Some approaches include tracking [7]. Other approaches treat a video as a sequence of frames such as in [5] and in [4].

### 3d-2d pose

# Bibliography

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