Weakly Supervised Object Localization and Segmentation in Videos

Mrigank Rochan, Shafin Rahman, Neil D.B. Bruce, Yang Wang

PII: S0262-8856(16)30151-2
DOI: doi: 10.1016/j.imavis.2016.08.015
Reference: IMAVIS 3551

To appear in: *Image and Vision Computing*

Received date: 20 September 2015
Revised date: 4 June 2016
Accepted date: 22 August 2016

Please cite this article as: Mrigank Rochan, Shafin Rahman, Neil D.B. Bruce, Yang Wang, Weakly Supervised Object Localization and Segmentation in Videos, *Image and Vision Computing* (2016), doi: 10.1016/j.imavis.2016.08.015

Weakly Supervised Object Localization and Segmentation in Videos

Mrigank Rochan[a,*], Shafin Rahman[a], Neil D. B. Bruce[a], Yang Wang[a]

[a]*Department of Computer Science, University of Manitoba, Winnipeg, MB R3T 2N2, Canada*

Abstract

We consider the problem of localizing and segmenting objects in weakly labeled video. A video is weakly labeled if it is associated with a tag (e.g. YouTube videos with tags) describing the main object present in the video. It is weakly labeled because the tag only indicates the presence/absence of the object, but does not give the detailed spatial/temporal location of the object in the video. Given a weakly labeled video, our method can automatically localize the object in each frame and segment it from the background. Our method is fully automatic and does not require any user-input. In principle, it can be applied to a video of any object class. We evaluate our proposed method on a dataset with more than 100 video shots. Our experimental results show that our method outperforms other baseline approaches.

Keywords: weakly supervised, object localization

1. Introduction

Due to the popularity of online video sharing websites (e.g. YouTube), an ever-increasing amount of video content is becoming available nowadays. These online videos prove to be both a valuable resource and a grand challenge for computer vision. Internet videos are often weakly labeled. For example, many

*Corresponding author

Email addresses: mrochan@cs.umanitoba.ca (Mrigank Rochan), shafin12@cs.umanitoba.ca (Shafin Rahman), bruce@cs.umanitoba.ca (Neil D. B. Bruce), ywang@cs.umanitoba.ca (Yang Wang)