

Learning cinematographic styles from pictures

M2R Internship proposal, October 2016

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Context

There is currently a lot of interest in analyzing large movie databases to automatically extract film style and aesthetics [1,2]. This analysis has, however, been largely limited to identifying the duration, size, color and motion of movie shots. While these low-level details are pertinent, they do not provide a high-level understanding, such as identifying the inherent style in a movie. Ultimately, they are unable to answer challenging questions such as, *can we identify the cinematographer from a single movie clip?*

Objectives

The goal of this internship is to take the first step in addressing this challenge. We will study the problem of attributing authorship of motion pictures, by learning models of famous cinematographers from sample frames of their movies. This will be cast as a supervised classification problem, and we will implement and evaluate solutions that have proved effective in other computer vision classification tasks.

We will build on very recent work of Thomas and Kovashka [4], which proposed a method for identifying authorship of a small collection of photographs. The new approach will be extensively evaluated on the dataset proposed by Cutting et al. [3]. In this first step, we will focus on individual frames extracted from the movie collection. Specifically, we will extend [4] to handle much larger data collections, by exploiting not only appearance cues, but also the fact that the image frames are from a movie collection, and are related. The next step is to incorporate features derived from the motion of the camera and/or the actor.

This internship is likely to lead to a PhD thesis on transferring style from movies to 3D animation.

Requirements

The student must have solid programming skills. Prior knowledge of machine learning tools (e.g., TensorFlow, Torch, Theano, Keras) is a big plus.

References

[1] <http://www.cinematics.lv>

[2] B. Salt, *Film Style and Technology: History and Analysis*, Starword, 2009.

[3] J. E. Cutting, J. E. DeLong and C. E. Nothelfer, Attention and the evolution of Hollywood film, *Psychological Science*, vol. 21, pp. 440-447, 2010.

[4] C. Thomas, A. Kovashka, Seeing Behind the Camera: Identifying the Authorship of a Photograph, CVPR 2016.