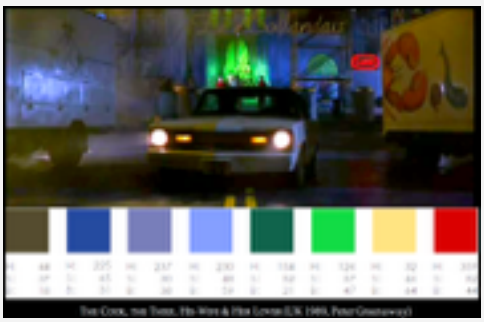
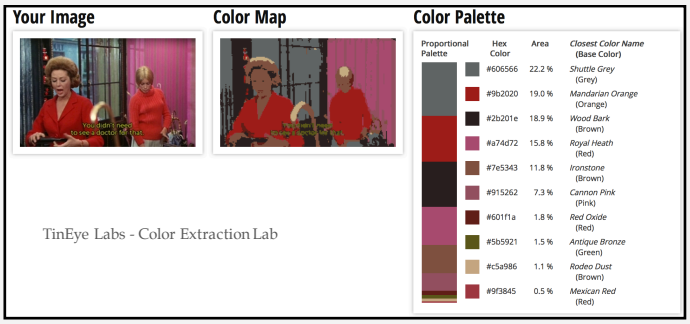
Student Project

Foreground/Background Color Analysis from Films

University of Zurich[UZH]

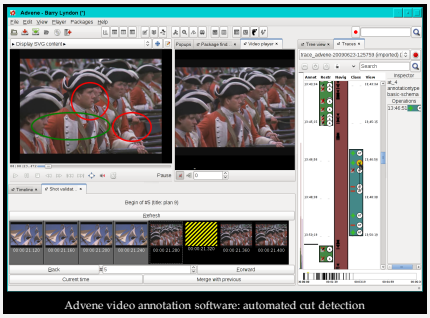




Topic

According to perceptual psychology and film theory, color perception and lighting are two of the most important factors managed by film creators to convey a particular mood to a film. Thus, the analysis of color palettes in films has long been used in qualitative and semantic film studies. To extract color information from films in a meaningful manner, researchers working in the field frequently resort to manual scene annotation, which is a very tedious and time-consuming process.

On the other hand, in parallel with the increasing availability of high-performance computing devices, computer vision methods have evolved tremendously in recent years. Several methods have been presented and refined to extract specific features and objects from static images and video sequences, sometimes working in real-time. Most of the largest software companies have also started to use these algorithms in production environments. This large community of researchers and industrial partners has created many high quality software libraries (e.g. OpenCV) and open-source resources which are fairly reliable and easy to integrate into custom solutions.



Advene video annotation software: automated cut detection

This project aims to use the available computer vision resources for the development of custom tools to help with the extraction of color information and annotation of films.

Assignment

Develop a set of tools for the automatic extraction of color features in actual films. This task includes, as a first step, the temporal segmentation of a stream of frames into a set of coherent video segments and film scenes. A second step will be to generate a valid segmentation of the segment frames, specially focused on identifying the film characters and the most relevant foreground objects. The final step consists in an analysis stage where quantitative color analysis and, optionally, some pattern recognition and texture analysis method will be applied to annotate the identified objects and segment with relevant features.

As mentioned earlier, several sources and libraries already exist to perform this tasks. The student should decide which tools fit best for every task and use them judiciously during the development of the project, specially for the most basic tasks.

Requirements

Interest in computer vision techniques. Programming experience in Python and/or C++. Familiarity with OpenCV and Matlab would be a plus.

Work Load

- 20% theory
- 60% implementation
- 20% testing

Student Project Type

This project can fit into a Software Project, Bachelor or Master thesis. Goals will be adjusted depending on the project type.

Supervision

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Prof. Dr. Barbara Flueckiger
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Contact

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