

VIAN

Visual Film Annotation and Analysis



Author:
Gaudenz Halter

ERC Advanced Grant FilmColors
Department of Film Studies
University of Zürich

Visualization and MultiMedia Lab
Department of Informatics
University of Zürich



University of
Zürich^{UZH}

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1 FilmColors Project

VIAN is developed a part of the ERC FilmColors project, which aims to systematically investigate the relationships between technological processes and the aesthetics of film colors through a new interdisciplinary approach of film and computer science. The project will develop new software to analyze a large number of color films from each decade since the invention of film. Aesthetic analyses in film history will be supplemented with measurement methods from the natural sciences to investigate the chemical and physical characteristics of film colors. Part of the project is the segmentation and classification of a corpus of approximately 450 films. The process for each movie is the following:

- Segment a Film into coherent segments (ELAN)
- Taking a set of representing stills for each segment (ELAN)
- Classifying the Segments based on a large set of Vocabularies (FileMaker) (approx. 1000 words)
- Using (semi-)automatic tools to extract color-features (VIAN)

Most of these tasks have been done using ELAN for the segmentation and still-taking of the films. Since the number of stills per full-length movie lies roughly between 500 and 1000, storing each still separately and naming it correctly, can become a time-consuming process and involves a high error rate in the naming convention. As such, VIAN has initially been developed as an application that could be remotely controlled by ELAN and allowed to automatically generate stills, name them according to our convention, store them consistently and to be able to draw basic shapes onto a frame. Over the last year, the list of requirements for VIAN has grown, including:

- Providing an Interface for automatic analyses
- Per Frame Update when scrubbing through a movie
- Generating film visualizations

VIAN tries to simplify this process by combining all features needed in the described workflow. This is especially important for the FilmColors project, because one final product of the project should be a WebApp that allows visualization of the Corpus as well as a crowd-sourcing toolset that is able to commit new project to the Corpus. This toolset is VIAN.

2 Entities

The basic concept is, that there are entities that are collected by the user. (Segments, Visual Annotations and Screenshots), these can later be classified using a set of vocabularies.

To give an impression on how VIAN works and looks, some of the features are subsequently described.

2.1 Segmentation

VIAN uses two types of Tier based annotations, Segmentations and Visual Annotations. Segments refer to annotations that don't have a visual representation on the film's frame, thus these are equivalent to the annotations of ELAN.

2.2 Visual Annotations

Contrary, visual annotations have an additional representation on the screen, i.e. Text, Image, basic geometric shapes or freehand drawing. Their position and size may vary over time (*keyable*).

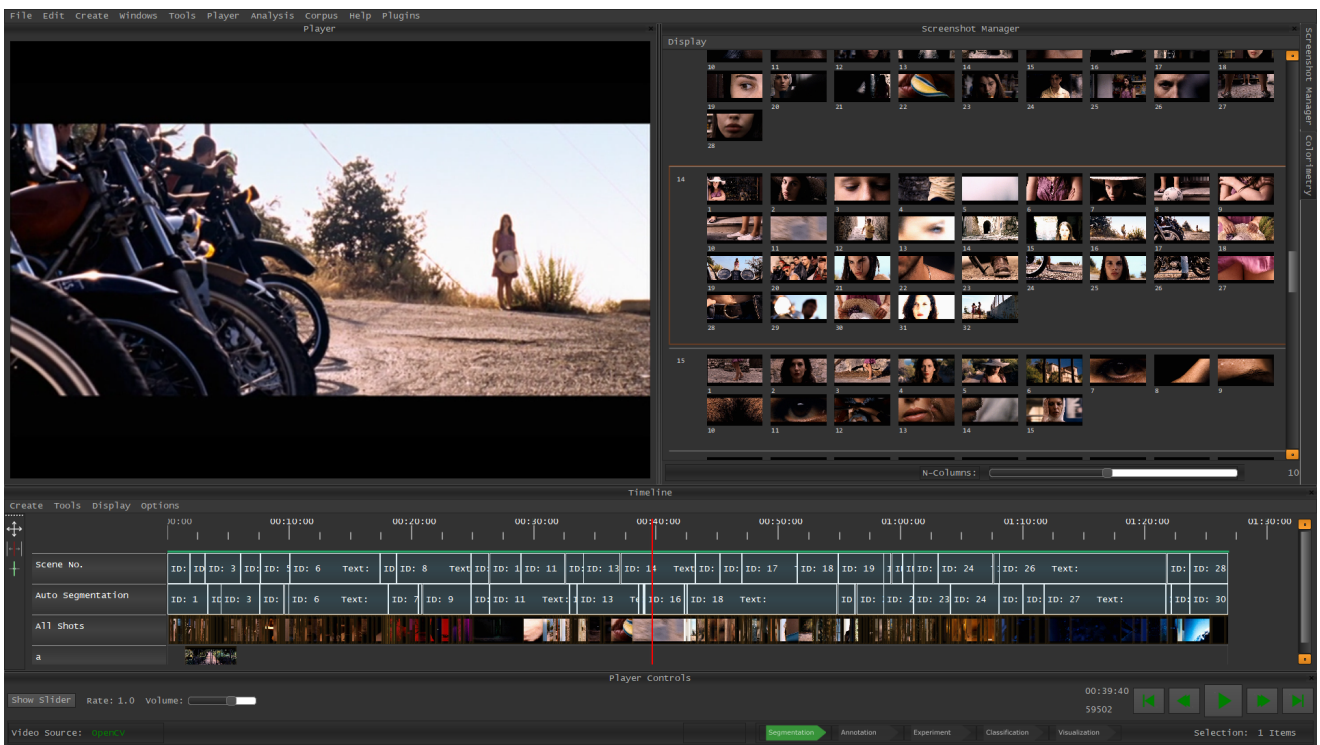


Figure 1: The default view of VIAN. The Screenshot Manager on the right. Stills are sorted by the segmentation and indexed within the segment. Additionally they are shown in the timeline.

2.3 Screenshots

VIAN treats stills as important objects, makes it easy to create, export and manage them. Typically, the stills represent a specific feature of a segment that the annotating person has observed. VIAN sorts them according to the segment they are in. Stills are only stored only by time, thus must be exported to be accessible without VIAN.

2.4 External Media-Objects

For both, annotations and segments, external media can be attached by simply drag and drop the file on the target in the timeline. VIAN will then copy the file to the project directory and link the media file to the entity it has

been dropped. Once the user wants to open the file, VIAN tries to use the default application of the OS to open the file.

2.5 Experiments

Once the Entities are collected, classification can set place. This is done using VIANs Experiment entity, which defines a set of rules that the annotator must conform.

- Automatic analyses that have to be performed (and their parameters)
- A list of Classification Objects and their associated Vocabularies
- Which entities should be classified
- The final classification results. (A list of keyword and entities)

Example:

In the FilmColors project, there is a specific distinction between *foreground* (the character-space) and the background (the object-space and void). One vocabulary called Hues was used to classify the most dominant colors of both the foreground and background. Thus the Classification Objects are *foreground* and *background*, both have to be classified by the vocabulary *Hue*.

A second vocabulary *Materials Character* was used, to give information about what materials were used for clothing and jewelry of the characters. Since this vocabulary should only be applied to the characters, only the Classification Object *foreground* should be classified by it. In the VIAN Experiment editor this would look the following:

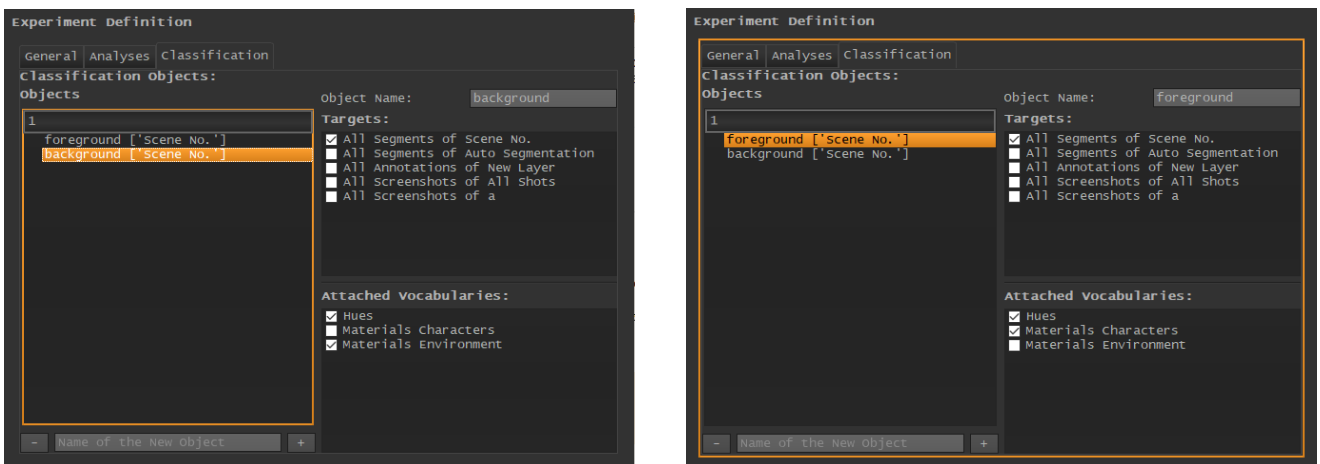


Figure 2: The default view of VIAN. The Screenshot Manager on the right. Stills are sorted by the segmentation and indexed within the segment. Additionally they are shown in the timeline.

Once the experiment is setup, VIAN will loop through all entities that should be classified and show the user the corresponding vocabularies.

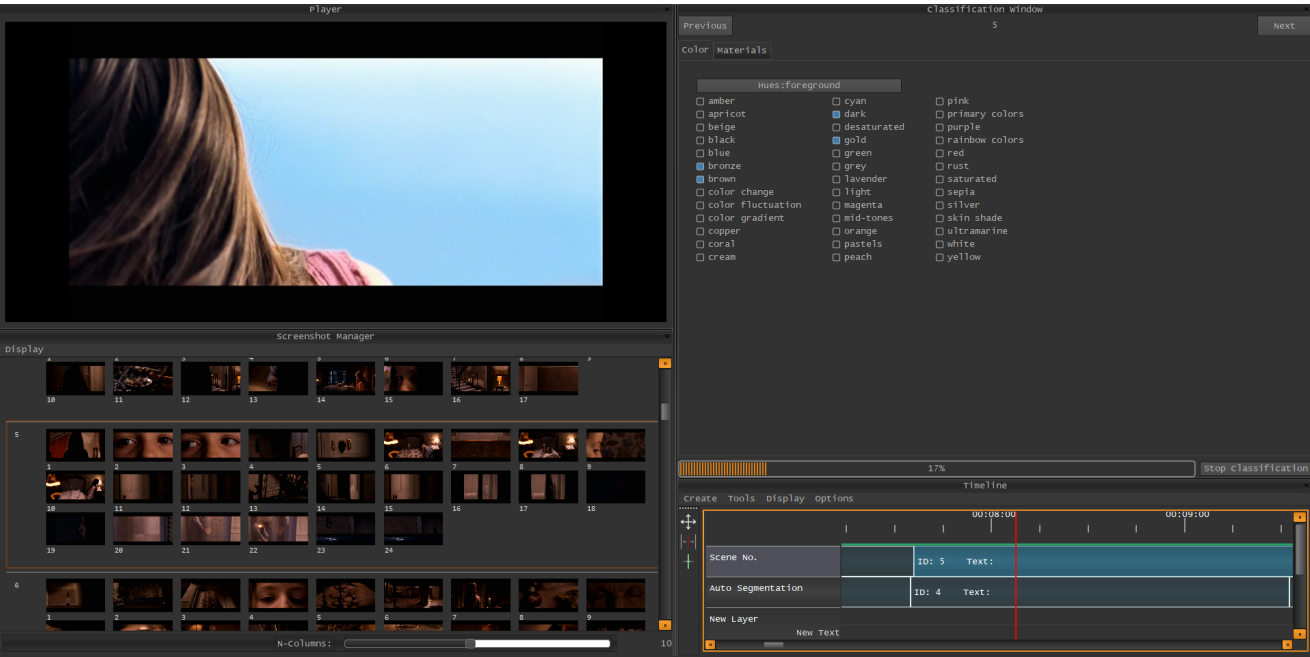


Figure 3: The default view of VIAN. The Screenshot Manager on the right. Stills are sorted by the segmentation and indexed within the segment. Additionally they are shown in the timeline.