AniVision Trends Data Visualization

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Group 13

Introduction

The result of the group work done as part of the course Information Visualization is an interactive website with a visualization supporting the investigation of the trends present in the AniVision dataset.

While the dataset allows for many different investigations, the developed visualization prototype supports two specific user groups: historians and media researchers (for a more detailed description of the user groups and their tasks please refer to the document of assignment 1). The provided views and selection method allow them to evaluate different time intervals, genres and countries in terms of prominent image effects applied to films.

The developed website and its source are accessible on our public repository.
Anivision Trends website: https://tobsel7.github.io/anivision-trends
Source code: https://github.com/tobsel7/anivision-trends

Visualization Techniques

In our visualization prototype we selected and combined visualization techniques to address the expected needs of historians and media researchers and tried to follow the Visual Information Seeking Mantra: Overview first, zoom and filter, then details-on-demand.

Our approach emphasizes techniques that effectively address the spatial and temporal dimensions of the data, which are critical for addressing the analytical goals of our target users. Specifically, "space" refers to the three production countries, while "time" is represented through a two-dimensional line graph.

The timeline graph allows users to focus on specific years and explore fine-grained data. For example, users can analyze which visual effects were predominantly used in certain years. For those interested in identifying broader relationships or trends, the graph provides an overview perspective, enabling users to view aggregated data spanning multiple decades.

Additional techniques used to enhance our visualization tool:

Sliding Window: A dynamic mechanism that allows users to specify a range of interest within a continuous dataset, enabling selected analysis on the time interval.

Filters: Tools that enable users to customize the dataset by applying specific criteria, thus pick relevant subsets for detailed examination.

Tree graph: The tree graph is an interactive tool that displays data in an aggregated form as the parent node. By clicking on the parent node, users can view its branches and child nodes, which represent different attributes within the topic.

Bubble-Chart: This technique represents a set of numeric quantities with closely packed circles whose areas are proportional to the quantities.

Table: The table provides a detailed view of relevant information in a grid format. Each row represents a specific data entry, while each column corresponds to a different attribute variable. This format allows users to easily compare and contrast individual data points across multiple attributes.

These visualization techniques are beneficial because they enable users to understand complex datasets intuitively. By integrating spatial and temporal dimensions, the visualizations provide a structured framework for identifying trends, relationships, and anomalies in the data. Historians and media researchers can leverage these tools to uncover patterns, such as shifts in production practices or the evolution of genre-specific effects over time.

We built our visualization using the Observable Framework, a platform designed for creating interactive data visualizations, making use of the D3 JavaScript library.

Views

The visualization offers insights into animation trends by presenting data on videos and their segments over the years. It also displays information about the organizations involved in their creation. Interactive elements include filters and various chart types, such as a timeline with a bubble chart and a collapsible tree.
These features enable users to explore animation-related data, including the number of videos, the use of video effects, and the organizations producing them.
Multiple views are available to provide different perspectives. The main view, located in the upper middle, combines a line chart and a bar chart to present an interactive timeline showing the number of videos released each year.

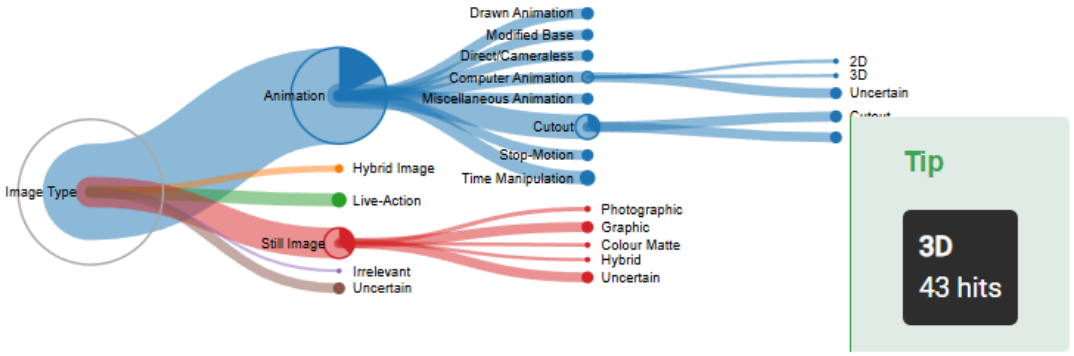
Users can interact with this timeline by selecting a timeframe through brushing. A time-window can be adjusted dynamically in size and position using the mouse. Changes in the selected timeframe are instantly reflected in the line chart and other views, allowing users to observe patterns over time—almost like an animation.

To the right of the video charts, filter dropdowns allow users to filter videos by genre and production country. These selections are synchronized across all views. Also multiple selections are possible.

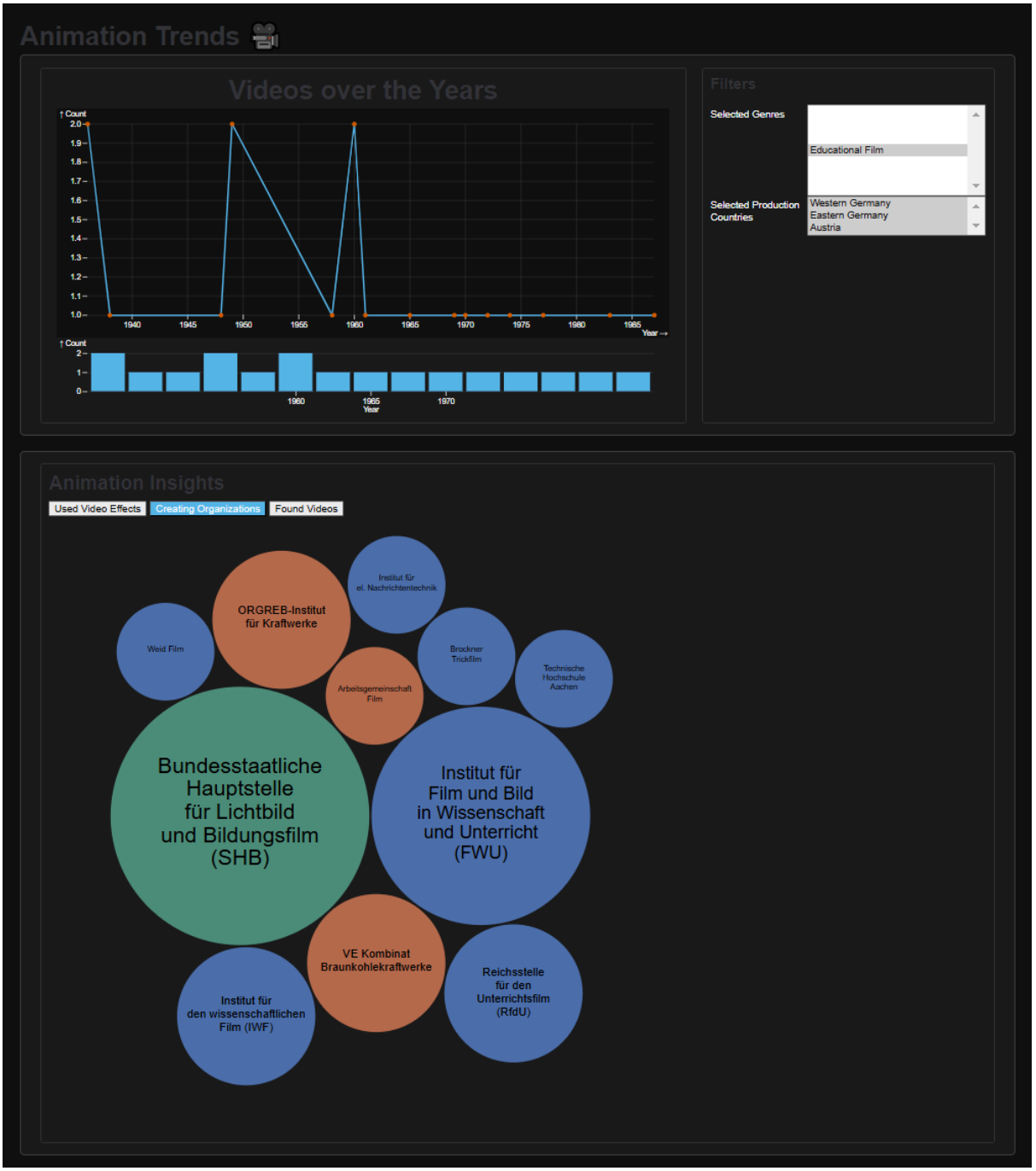
At the bottom of the page, tabs provide access to additional views, offering deeper insights into image types, animations, and video data.

The first tab, “Used Video Effects,” features a collapsible tree view that illustrates the image types used in selected videos hierarchically. The size of each node represents the relative frequency of an image type. Hovering over a node reveals a tooltip with the exact count, and

clicking a node expands or collapses branches of the tree.



Brushing through different decades in the timeline highlights trends—for example, more still images were used in videos during the 1940s and 1950s, while the proportion of animations increased later. Contrary to expectations, there was no noticeable rise in computer animations starting in the 1980s. This could be due to incomplete annotations, as many computer animations are labeled as “Uncertain.”
The second tab view “Creating Organizations” displays a bubble chart showing organizations involved in the selected videos. The number of videos here maps to the size of the respective organization bubbles. The production country maps to the color of the bubbles. The color scheme has been adapted following feedback from the first assignment. So the blue tone (traditionally West Germany) from the original palette was preserved, but with a more vivid shade (Cornflower Blue) that's easily recognizable. We chose Aqua-green for Austria, which is distinct from red and blue, even for people with red-green blindness. Finally, we adjusted red (traditionally East Germany) to orange-red, ensuring it's distinguishable from green for people unable to perceive red light.



Finally, the tab “Found Videos” shows a textual list of the selected videos for further details if required. Variables Title, year, genre and production country are listed there.