

Analyzing the Evolution and Impact of Animated Movies Worldwide

Team: Moscow Mickey Mule

Members: Lina Bousbina, Michael Burch, Alessandro Salo



Figure 1. Home page of the website.

Map Visualization: Tracing the Origins of Animation Studios Worldwide

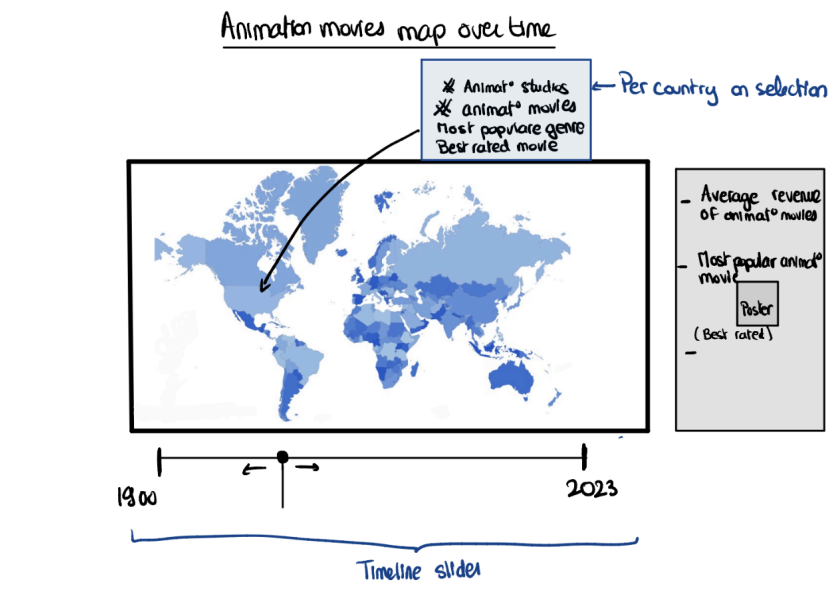


Figure 2. Initial sketch of map visualization

Initial Idea

The initial concept was to create a dynamic map showing the emergence of animation studios across the globe over time. The goal was to provide users with an intuitive and interactive way to explore when and where studios were founded, and how this growth reflects broader industry trends.

Data Source

The visualization is grounded in the *Animation Studio Dataset* from Kaggle, which includes key attributes for 348 animation studios, specifically their name, founding year, and country of origin. While concise, this dataset is complete and focuses solely on studios dedicated to animation, thus excluding broader media giants like Disney or DreamWorks unless their animation units are standalone.

Design Evolution and Features

Several design components were introduced to enhance usability and clarity:

Year Slider: Allows real-time filtering of studios based on their founding year. This lets users observe temporal trends and how studio creation has evolved.

Studio Dots: Each studio is represented by a dot on the map, positioned using geographic coordinates. These dots are styled in a vibrant color scheme and adjusted in size for better readability, especially in high-density regions.

Interactive Tooltips: On hovering, users receive immediate information including the studio's name, founding year, and country, ensuring accessibility without overwhelming the visual space.

Layer Toggle: A key usability enhancement lets users switch between the Studio and Movie layers, each with distinct visual priorities. Only one layer is visible at a time to reduce cognitive load.

Challenges and Technical Solutions

Several implementation challenges were addressed:

Marker Overlap: Dense regions such as Japan and the US initially appeared cluttered. We adapted by applying a non-proportional dot size and logical filtering, ensuring legibility while retaining informative value.

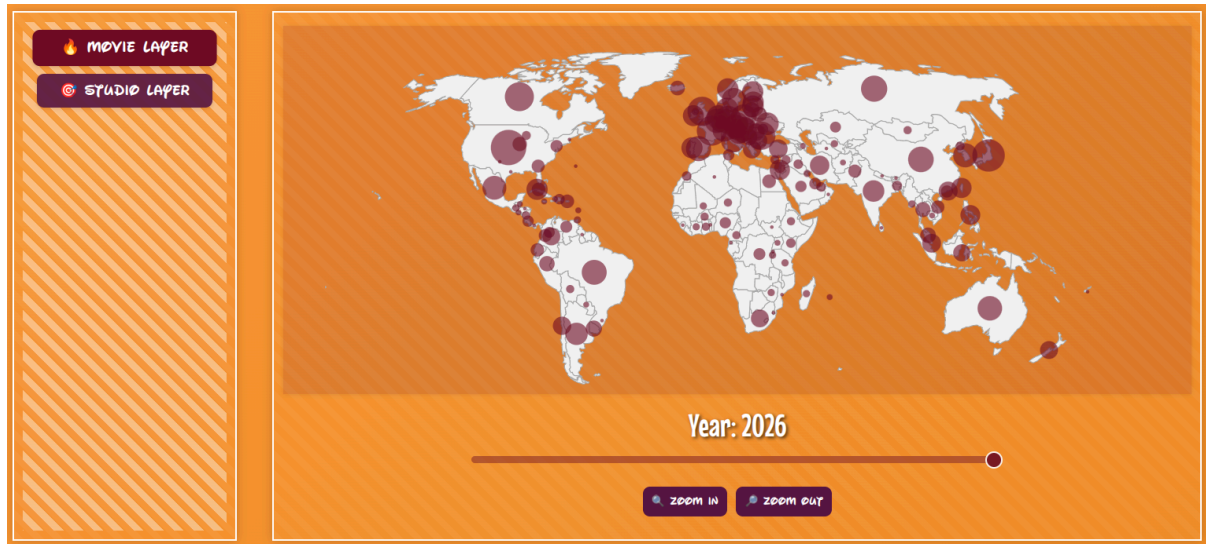


Figure 3. Final version of map visualization.

UI Clarity and Layer Management: Ensuring users could easily switch between studios and movies without clutter led to the development of mutually exclusive layers and clearly styled toggles.

Performance Optimization: Tooltips, zoom interactions, and dynamic filtering had to remain responsive even with complex data overlays. This required careful DOM management and selective element rendering.

Final Outcome

The studio map delivers an intuitive and visually engaging experience that merges interactivity with storytelling. Each studio is marked on a geo-referenced map and filtered via a year slider, allowing users to explore how studio creation evolved over time. A layer toggle enables seamless switching between Studio and Movie views, while tooltips reveal studio name, country, and founding year on hover. All interface elements are styled with the MouseMemoirs font to maintain a cohesive, animation-themed design. The result offers both a global overview of industry growth and localized insight into studio histories.

Genre Mix-and-Match: How Popular is Your Genre Combination?

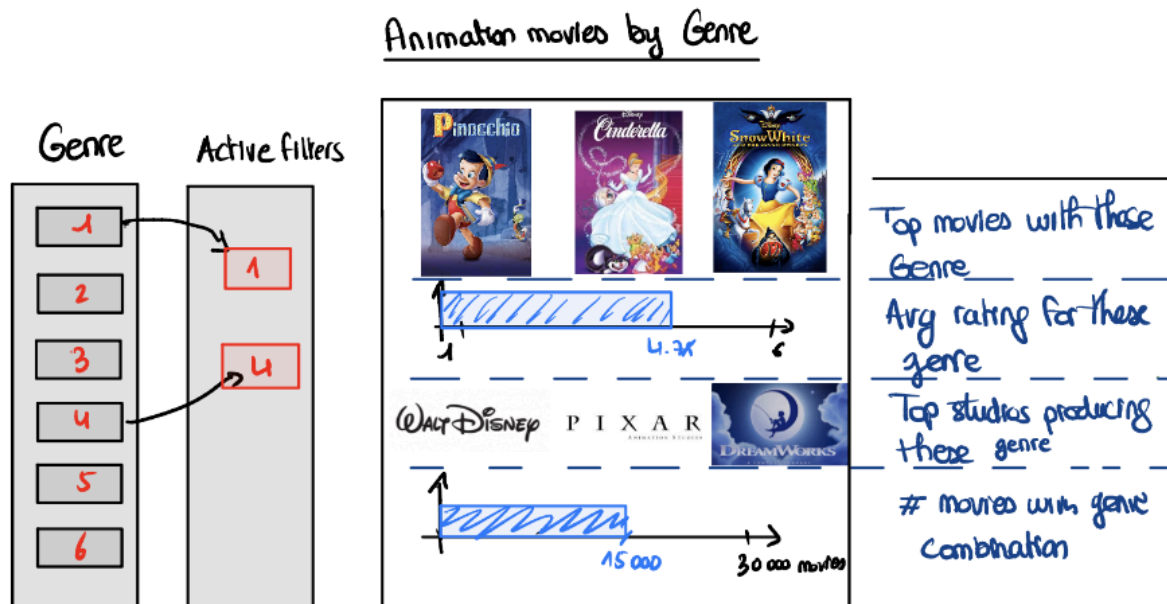


Figure 4. Initial concept of Genre mix and match.

Initial Idea

The core concept was to develop an interactive visualization that dynamically adapts based on selected genres from a dataset of movies. The vision was to let users mix and match genres and immediately observe related data visualizations, such as top rated genres, average ratings, top studios, and movie counts.

Design Evolution and Features

The design journey for this visualization was structured into distinct phases:

Phase 1: Core Framework Development

The initial step focused on establishing a functional framework where users could drag and drop genre buttons into designated locations. At this stage, the design was intentionally minimal and not yet styled to match the intended theme. This phase successfully implemented dynamic generation of the genre list by reading from the .json dataset, laying the groundwork.

Phase 2: Basic Visualizations

With genre selection mechanics in place, attention shifted to generating responsive visualizations. A simple bar chart was introduced in the data display column showing the first five entries of movies corresponding to the selected genres. While basic, this step confirmed that our system worked.

Phase 3: Visualization Refinement and Expansion

The next milestone aimed to replace the placeholder bar chart with more meaningful and engaging visualizations. The four types of statistics we wanted to display were:

- Top genres (with visual support such as cover images)
- Average rating of selected genres
- Top studios producing movies in these genres (including visual branding)
- Total number of movies using the selected genres

During this phase, we began asking whether all statistics should be simultaneously shown on one page. The final decision was to separate each into its own slide to simplify and emphasize clarity. Buttons were added to ensure that the user could go from one visualization to the next.

Initial visualizations for top genres and studios was to use a bubble chart. However, after implementing a bubble-chart, the main issue was the excessive waste of space since the display slide was rectangular. This meant that less information could be shown. As a result, a treemap was implemented instead, which nicely filled the whole of the rectangular display.

Phase 4: Feature Completion and Initial Stylization

With the core visualizations in place, the focus shifted toward stylistic refinement and enhancing visual diversity. The next steps focused on making the static visualizations more interesting by implementing more color and animations. To begin, all features received very basic animations – for example, hovering over an object in the treemap enlarges it. Additionally, it was at this point that the two colors maroon (#6E0D25) and deep purple (#561643) entered the color palette of the website. These colors are primarily used on anything data-related, giving an intuitive separation from what is a visualization and what is background information or narrative.

Challenges and Technical Solutions

Challenge: Deciding whether all four types of genre-related statistics (top genres, average rating, top studios, total number of movies) should be displayed simultaneously or separated.

- **Resolution:** Chose to separate them into distinct slides to simplify presentation and enhance clarity. Added navigation buttons to allow users to move between visualizations smoothly.

Challenge: The initial bubble chart used for top genres and studios wasted space due to the rectangular display layout, limiting the amount of information shown.

- **Resolution:** Switched from a bubble chart to a treemap, which efficiently filled the rectangular display and improved information density.

Challenge: Making static visualizations more visually interesting and interactive.

- **Resolution:** Added basic animations, such as hover effects that enlarge treemap elements, to make the visuals more engaging.

Final Outcome

The **genre mix-match visualization** offers an intuitive and interactive experience by allowing users to drag and drop genre buttons, dynamically generating various statistics based on their selections. The design balances clarity with visual appeal, using a **sliding window feature** that seamlessly separates the data into three distinct pages, each showcasing a different aspect of the selected genres. For pages displaying **top genres and top studios**, a **treemap** visualization is employed, effectively using size and color differences to highlight top

movies/studios. On other pages, which display **total movies** and **average ratings**, numerical data is accompanied by **tween arcs** – these provide both appealing aesthetics and a more intuitive sense of proportion and scale.

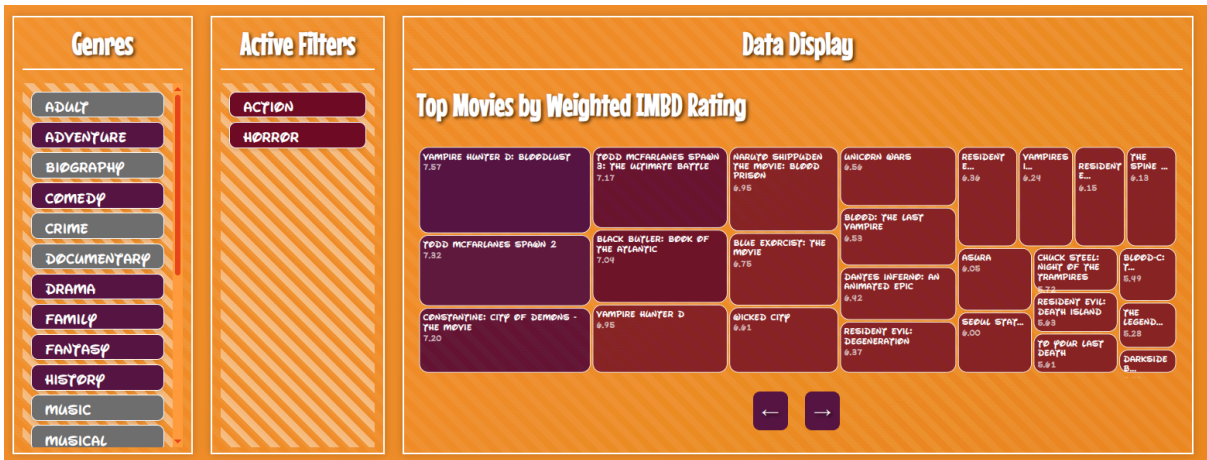


Figure 5. Final version of Genre mix and match.

Movie Comparison Visualization Report

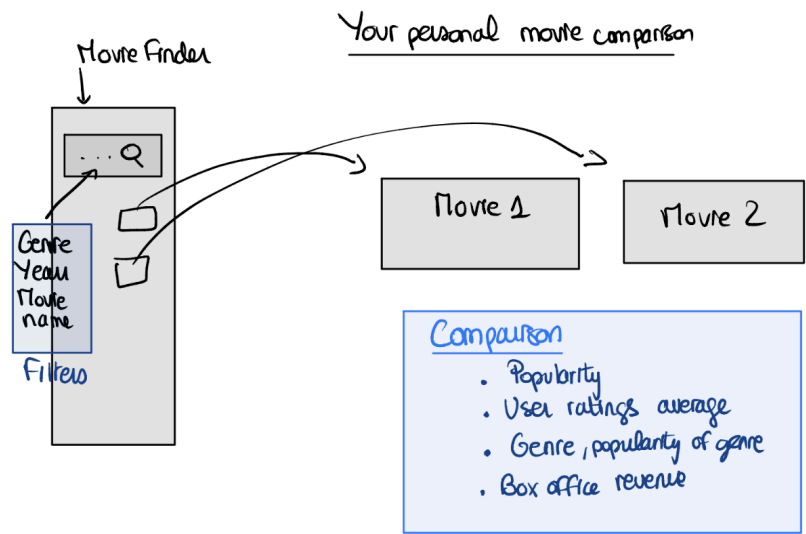


Figure 6. Initial concept of Movie Comparer.

Initial Idea

The core concept was to develop an interactive movie comparison tool that enables users to search through a comprehensive dataset of animated movies and perform side-by-side comparisons of key metrics. The vision was to create a dual-panel interface where users could intuitively discover movies through search and filtering mechanisms, then seamlessly select any two films for detailed comparative analysis across multiple dimensions including ratings, revenue, runtime, and budget.

Design Evolution and Features

The design journey for this visualization was structured into distinct phases:

Phase 1: Data Integration and Core Architecture The initial step focused on establishing a robust data pipeline to handle the 50,000+ movie dataset stored in CSV format. This phase successfully implemented data loading, cleaning, and preprocessing using D3.js, converting string values to appropriate numeric types and structuring genre information into searchable arrays. The foundation was built as a single JavaScript implementation to maintain simplicity and ensure seamless data sharing between components.

Phase 2: Search and Discovery Interface With data infrastructure in place, attention shifted to creating an intuitive movie discovery experience. A comprehensive search interface was developed featuring real-time text search, genre filtering via dropdown selection, and year-based filtering. The search results display was designed as scrollable movie cards showing essential information (title, year, rating, genres) with hover effects to enhance user interaction and visual feedback.

Phase 3: Comparison Mechanism and User Interface The next milestone focused on implementing the core comparison functionality. Two designated movie slots were created in the right panel, allowing users to click movies from search results to populate comparison positions. Clear visual feedback was implemented through color changes and styling updates when movies are selected, along with remove buttons (*) for flexible movie management. The interface gracefully handles various user interaction patterns, including replacing existing selections.

Phase 4: Data Visualization and Chart Implementation The final phase concentrated on creating meaningful comparative visualizations. A horizontal bar chart was implemented using D3.js scales and SVG elements, displaying four key metrics: rating, revenue (in millions), runtime (minutes), and budget (in millions). Each movie is represented by distinctly colored bars (teal and coral) with numerical value labels. A legend system clearly identifies which bars correspond to each selected movie, and the chart dynamically updates whenever new movies are selected.

Challenges and Technical Solutions

Challenge: Managing the large dataset (50,000+ movies) while maintaining responsive search and filtering performance. **Resolution:** Implemented efficient data preprocessing during initial load, converting all necessary fields to appropriate types upfront. Limited search results display to 20 movies to optimize rendering performance while maintaining comprehensive search capabilities.

Challenge: Creating an intuitive user flow that seamlessly connects movie discovery with comparison functionality. **Resolution:** Designed a clear left-to-right workflow where search results directly populate comparison slots through simple click interactions. Visual feedback and hover effects guide users through the selection process naturally.

Challenge: Handling edge cases in movie selection logic and ensuring clean state management. **Resolution:** Implemented robust selection logic that handles empty slots, replacement scenarios, and clear operations. Added visual clear buttons and appropriate fallback states when fewer than two movies are selected.

Challenge: Creating meaningful comparative visualizations that effectively communicate differences between selected movies. **Resolution:** Chose horizontal bar charts for clear metric comparison, implemented appropriate scaling for different value ranges (ratings vs. revenue), and added value labels and legends for precise interpretation.

Final Outcome

The movie comparison visualization delivers an intuitive and comprehensive tool for exploring animated movie data through a well-structured dual-panel interface. Users can efficiently discover movies through multiple search and filter mechanisms, then seamlessly transition to detailed comparative analysis. The visualization successfully balances functionality with usability, featuring responsive design elements, clear visual hierarchy, and smooth interactions. The implementation demonstrates effective use of D3.js for both interface creation and data visualization, resulting in a cohesive tool that transforms a large dataset into an accessible and engaging user experience for movie analysis and comparison.

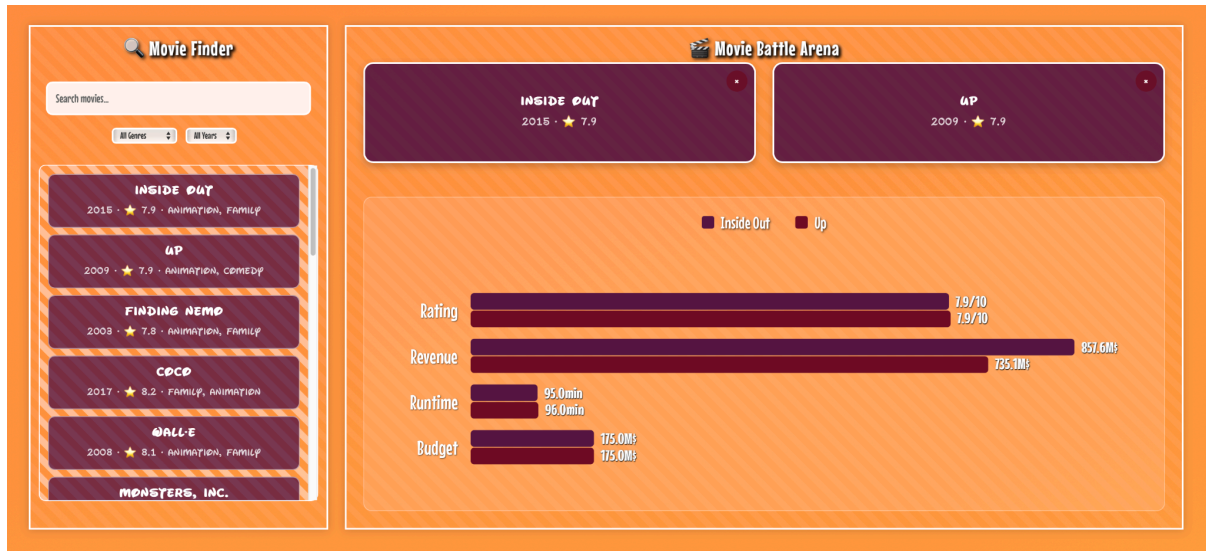


Figure 7. Final Version of movie comparer.

Peer Assessment Breakdown

Alessandro:

- Initial website template
- All of Genre Mix-and-Match visualization
- Website style finalization
- Update of map visualization to correspond with the new style

Michael:

- Initial website template
- All of Movie Comparer visualization
- Website style finalization

Lina:

- Revamping/restructuring of initial website template
- All of map visualization