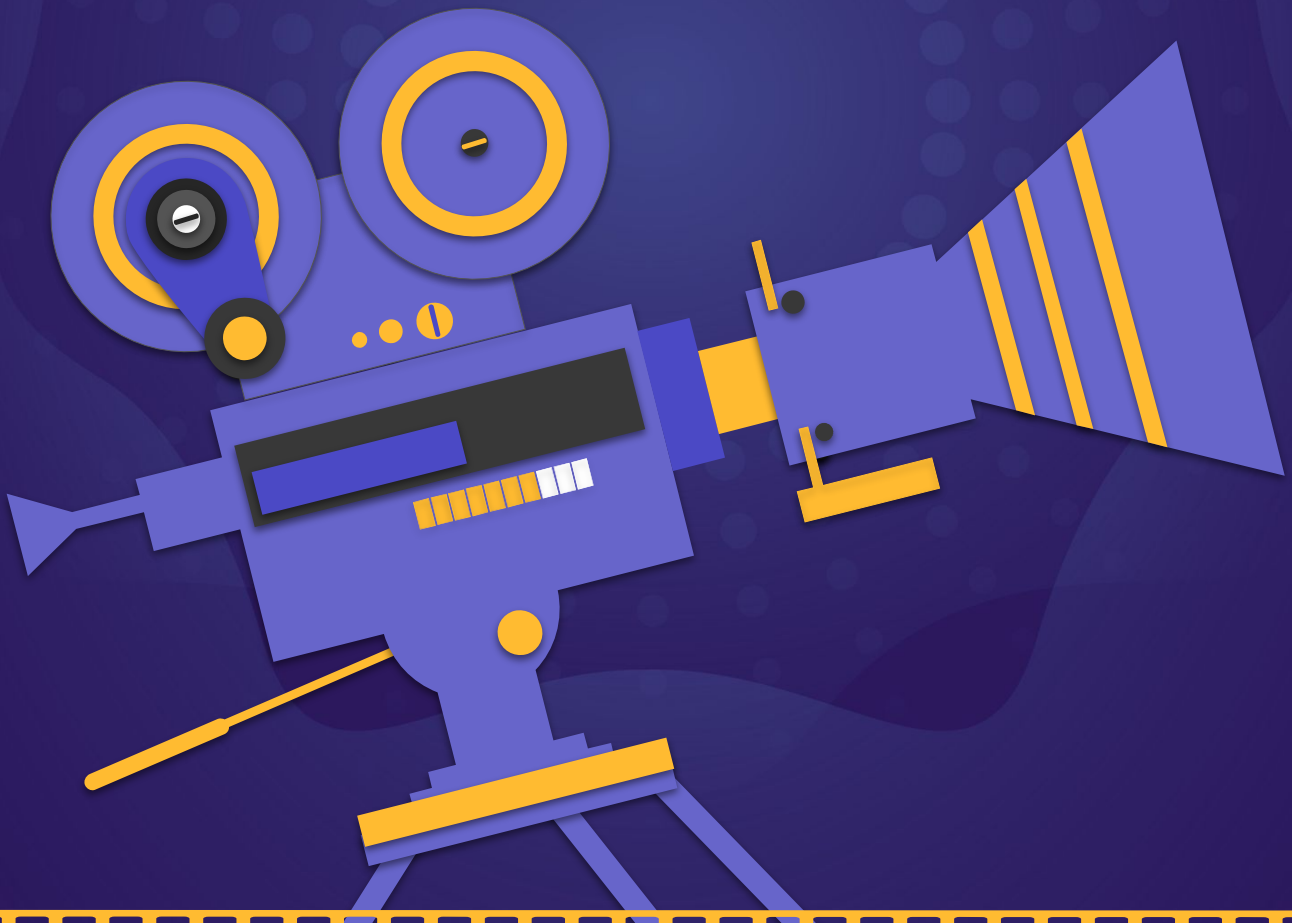# Interactive Network In the Film Universe

Data Visualization Project

Aymeric Bacuet & Kenji Tetard

Introduction

1. Our Motivations

If, like us, you are a movie enthusiast, you've likely found yourself lost in a universe of endless film choices and captivating connections between actors and directors.

The global cinematic landscape is filled with diverse narratives, painting a rich tapestry of content. This overwhelming diversity can poses challenges when it comes to grasp the intricate relations and connections within this universe.

2. Our Goal

To shed light on this complex web of relationships in the movie industry and make cinematic exploration more intuitive and enjoyable. We decide to accomplish this by creating a comprehensive and interactive tool that provides a clear, engaging insights on the career of an actor and his intricate network connection.

3. Target Audience

This project is for anyone who is remotely interested in the film industry. Whether it's an experienced film buff looking to expand their knowledge of the industry or just someone wondering what movie to watch tonight, the vast amount of easily accessible information is intended to be accessible to anyone.

Timeline of milestones and achievements

Dataset selection and data processing

Focus on visual design and extra features

01 --→ 02 --→ 03 --→ 04

Brainstorming and sketches

Base skeleton and basic interactives features

1. Brainstorming and sketches

Our journey began with the initial design of our website, where we planned to display our information. Right from the start, we aimed to highlight the connections between actors, as well as between actors and directors, in a way that was easy to understand and interact with. We also wanted to provide insightful details about the careers of actors and directors over time and across different genres.

To represent the connections between actors, we decided on a simple and clear graphic. In this graphic, the chosen actor sits at the center, linked to other actors they've worked with.

To offer insight into an actor's career, we included charts showing the different genres they've worked in. We were also keen to provide pictures and information about the movies. By offering a visually intuitive platform, we hoped to make exploring the diverse landscape of cinema a delightful experience.

Here are some of the sketches we made during the brainstorming process:
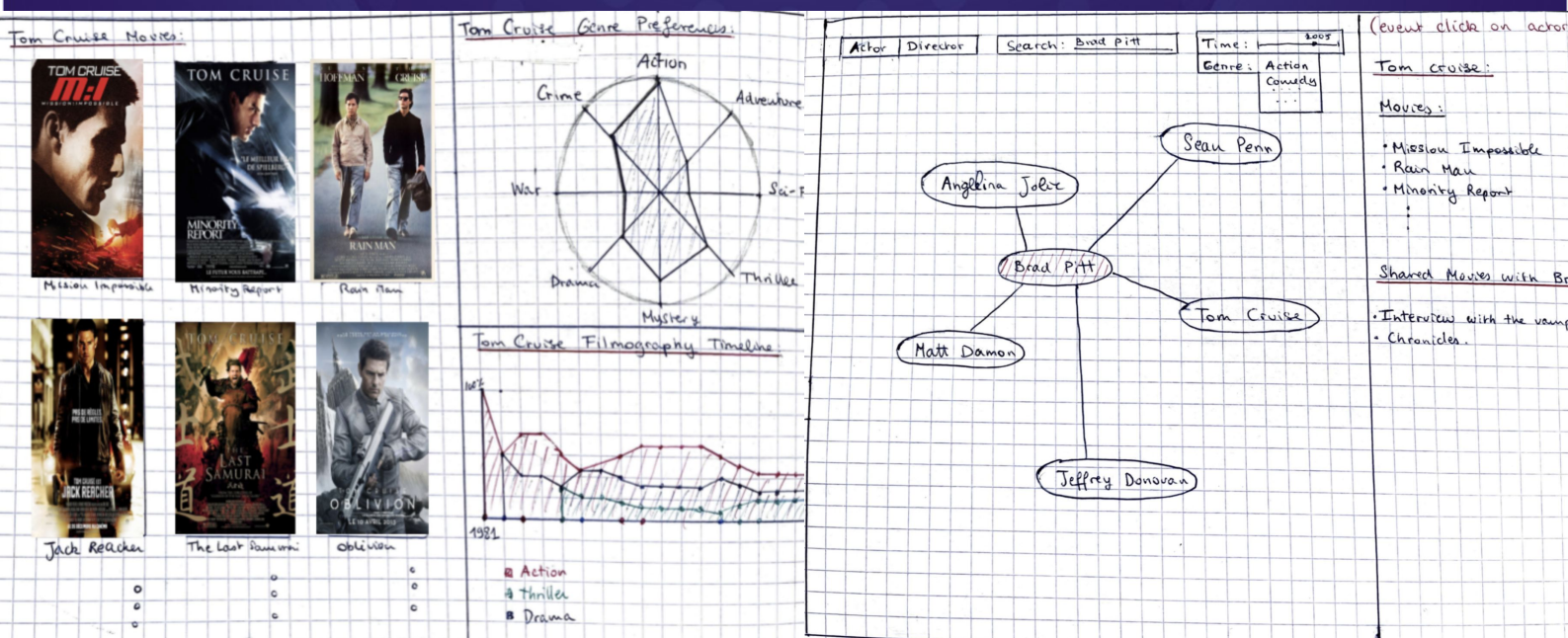
Timeline of milestones and achievements

2. Data selection and processing

Our journey continued with the crucial task of data collection. We selected the IMDb "Films by Actors" dataset, which included information about all the movies each of about 10,000 actors has appeared in. We also needed movie covers, which we found in another study called "Movie Genre Classification based on Poster Images with Deep Neural Networks".
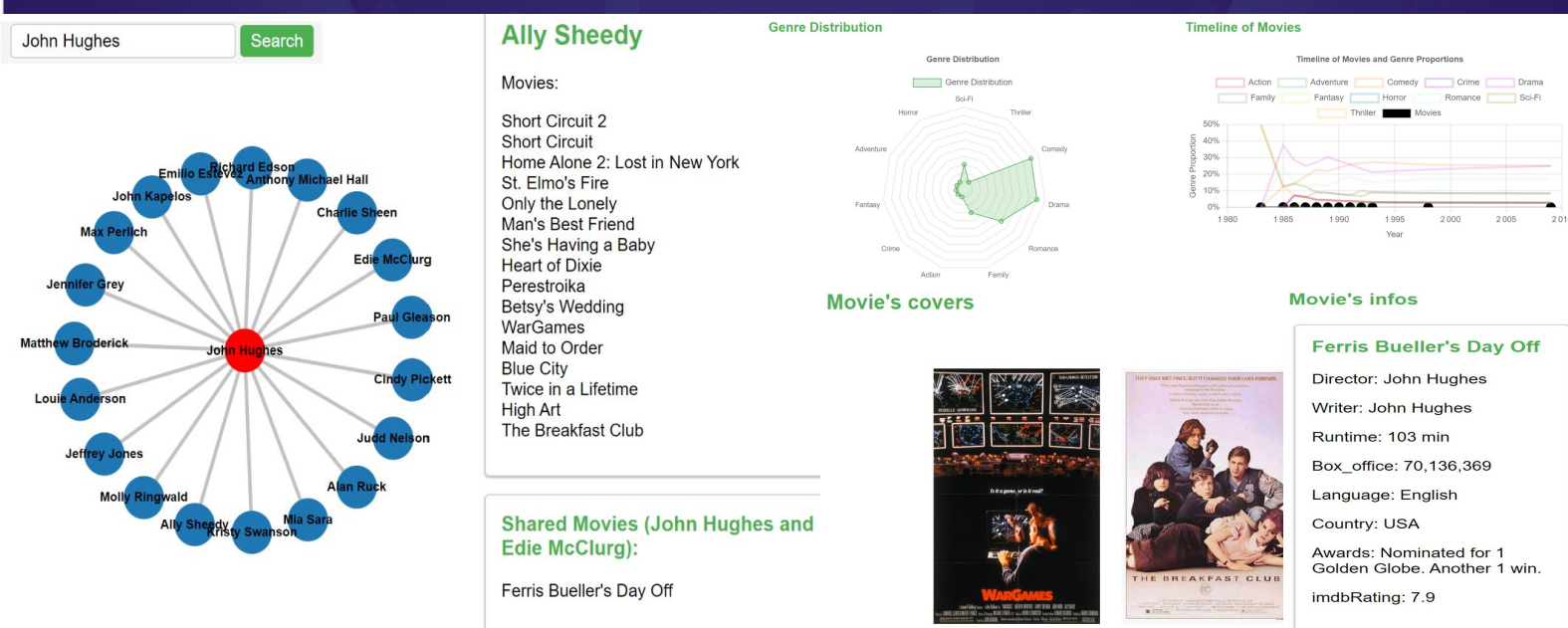
A major part of our work involved creating multiple dictionaries. These dictionaries were essential for organizing and mapping all the information about each actor and director, and for compiling lists of actors and directors with whom they've collaborated. In addition, we ranked actors based on their fame, determined by the number of movies they've appeared in. This helped us prioritize these actors in our visualization, making our tool even more user-friendly.

3. Skeleton and basic features

Next, we reached the implementation phase. Putting our JavaScript and HTML skills to good use, we developed the first version of our website. We utilized the D3.js library to create an interactive graph showcasing actor connections, built from our preprocessed data.

The user interface we designed allows for an actor search. Once an actor is selected, every connected actor is displayed along with information about their movies and career. The user can click on the connections between actors to reveal the movies they've worked on together. Movie covers are readily available and clickable, offering more detailed information about each film.

Here are some images of the first website version version :

John Hughes — Search

Richard Edson
Emilio Estevez — Anthony Michael Hall
John Kapelos
Charlie Sheen
Max Perlich
Edie McClurg
Jennifer Grey
Paul Gleason
Matthew Broderick — John Hughes
Cindy Pickett
Louie Anderson
Judd Nelson
Jeffrey Jones
Alan Ruck
Molly Ringwald
Mia Sara
Ally Sheedy — Kristy Swanson

Ally Sheedy

Movies:

Short Circuit 2
Short Circuit
Home Alone 2: Lost in New York
St. Elmo's Fire
Only the Lonely
Man's Best Friend
She's Having a Baby
Heart of Dixie
Perestroika
Betsy's Wedding
WarGames
Maid to Order
Blue City
Twice in a Lifetime
High Art
The Breakfast Club

Shared Movies (John Hughes and Edie McClurg):

Ferris Bueller's Day Off

Genre Distribution

Genre Distribution

Timeline of Movies

Timeline of Movies and Genre Proportions

Action Adventure Comedy Crime Drama
Family Fantasy Horror Romance Sci-Fi
Thriller Movies

Movie's covers

Movie's infos

Ferris Bueller's Day Off

Director: John Hughes
Writer: John Hughes
Runtime: 103 min
Box_office: 70,136,369
Language: English
Country: USA
Awards: Nominated for 1 Golden Globe. Another 1 win.
imdbRating: 7.9

# Timeline of milestones and achievements

4. Design and extra features

Our final focus was on enhancing user experience, ensuring it was both enjoyable and informative. To this end, we undertook a significant visual update of our website and implemented new features. Users can now filter and sort movies by genres and characteristics like ratings or date of release,, making the information easier to access and understand. We also made it easier for the user to retrieve the name of an actor by adding a auto-filling search bar.

One of our key additions is the "actors to directors" connection graph. This feature offers insights about the directors an actor has collaborated with, providing another dimension to the exploration of the cinematic landscape.

We've also rethink our charts to display more accurate and readable informations. Plus, we added a slider feature to let users choose how many actors they want to see on the screen at once. This way, it's simpler for users to get the information they're looking for.

Here is an example of the page you can found using our updated website:
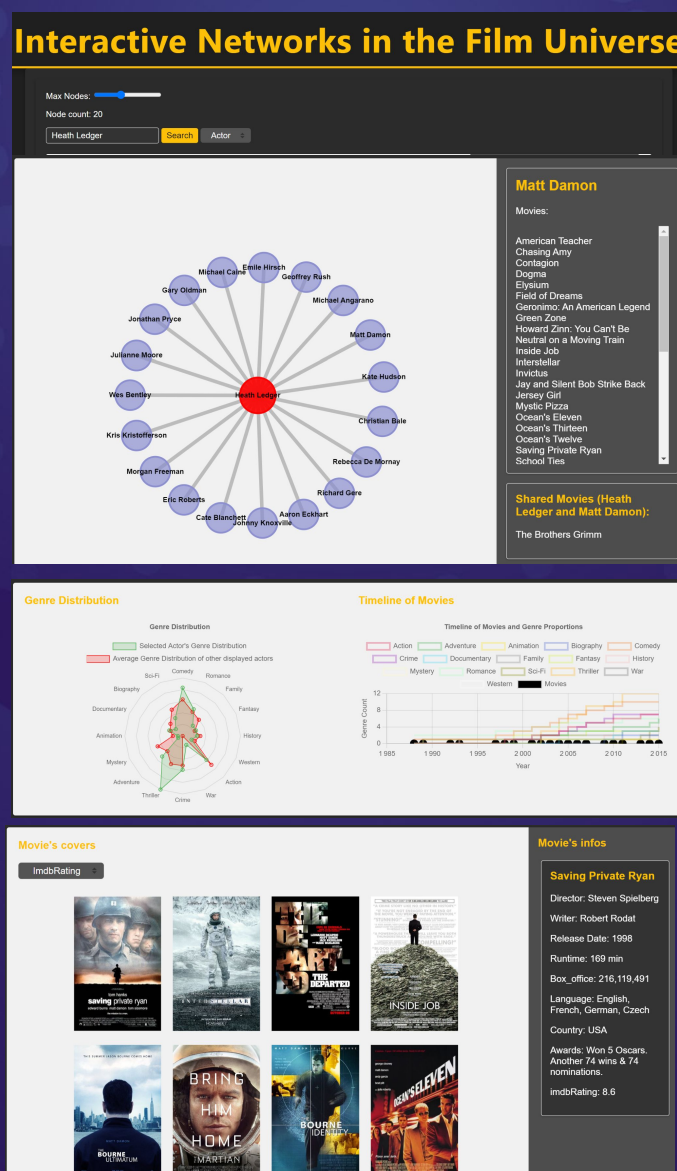
Challenges and design decision

1. Main challenges and design decision

The first important challenge was about building coherents and complete dictionaries from the vast amount of collected data. We had to implement numerous functions to retrieve all the necessary informations about the actors and we had to complete those using other dataset when informations where missing. We opted for dictionaries as it was the most intuitive way to retrieve informations for a selected actor.

Another challenging part of this project was to make our code more efficient as we encountered some performance issue due to our data construction and code structure that had to be rethink. Some of the datasets were to big and needed to be filtered in order for the computations to take less time.

It was also challenging to figure out how to display the actors around the graph. Initially we displayed all the actors that had played with the selected actor, resulting in a graph containing hundreds of nodes in some cases, making it near impossible to read and retrieve the wanted information. We had to create a popularity mapping of the actor based on the number of movies they played in and to display only the selected amount of node.

One last challenge was finding the best way to show information about an actor's career over time and across different genres. We decided to use a radar chart to show the different genres an actor has worked in. This made it easy to see what kind of movies an actor usually does. We also wanted to compare an actor's chart with the average of the other actors they worked with, as it gives even more insight into an actor's style. To show more about an actor's career over time, we decided to use a timeline chart. This shows how the genres of an actor's movies have changed over their career, giving a sense of the different stages in their work.

2. Drop down ideas

The idea of filtering the actor graph base on a selected genre or period of time was dropped down as we found some more insightful way of displaying those informations.
The idea of displaying the complete connection graph of the entire actors relation was also dropped down as it would have been very difficult to render it in an efficient and readable manner.

Peer Assessment

Being both very enthusiastic about this project, we spent lot of time to make sure we had the same vision of the final result. All significant decisions were made collaboratively, valuing and incorporating each other's perspectives. The amount of time and effort spent by each member was evenly distributed.

Breakdown of the tasks

Being a team of two we choose to break down the task the following way :

Aymeric Bacuet: Main focus on the first part of the website, including the actor selections, the graph implementation with the selection of the number of nodes, the display of the actors list of movies and all the interactive features on the graph. Also responsible for the implementation of the directors graph and all the corresponding features.

Kenji Tetard: Main focus on the second part of the website, including the two charts for the time and genre insight about the actor career and the display of the movie's cover and information. Implementation of the movies filtering using the timeline chart genres labels, and the movie's sorting based on the different criterions.

Both team members contributed to the data collecting and processing.