INTERACTIVE MEDIA IIIB: CRITICAL REFLECTION

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Global Economy and Artistic Implications

Web Technologies

Web technologies are the tools and methods used by people in the process of developing websites and web-based applications. This includes the use of software, programming and markup languages, and style sheets. The goal of these technologies is to facilitate the communication, interaction and development of websites and web-applications (Tiwari, 2024). The website in question was developed using HTML5, CSS and JavaScript. HTML5 is the latest standard of HTML (Hypertext Markup Language). It serves as the crux of this website as it provides the framework for how information will be structured and presented on the web, as well as laying the foundation for CSS (Cascading Style Sheets) and JavaScript to be implemented (*HTML - MDN Web Docs Glossary: Definitions of Web-related terms | MDN*, 2024).

As of 2024, CSS3 is the current and up to date standard used (*What is CSS? - Learn web development | MDN*, 2024). CSS provides developers and designers with the necessary functionality to apply styles to their HTML documents and control the coloring, fonts, layout. The website developed is inspired by a football club, AC Milan, therefore the style and theme revolved around that of the Football club. Colors schemes of black and red were the focus, with sleek and cursive typography. If we consider HTML to be the skeleton of the website and CSS as the styles applied. JavaScript is the muscles that add dynamicity to the overall product, improves the functionality and enables interactivity to create an experience from the product (*JavaScript — Dynamic client-side scripting - Learn web development | MDN*, 2024). JavaScript assists in the navigation of the website, dynamically generating a menu that links to other pages, adds the functionality for carousels sliders and buttons that allow users to interact with the website. By having standardized versions of these languages, it creates a global framework that ensures global access and compatibility. Users from across the world can view and interact with these websites, creating a larger pool of viewers and customers depending on the type of website.

D3.js is a JavaScript library used in the development of data visualizations on the web. It is incorporated into the website by transforming data sets into dynamic and interactive visual

formats such as graphs, charts, maps etc. D3.js was used in tandem with an API. Through using JavaScript, data sets can be pulled from an external source and transformed using D3.js. In context of this website rapidAPI was used, as it streamlines accessing the API's endpoints. Data relating to AC Milan such as league position and player performance was constructed into data visualizations. The data retrieved from the API is live data, not stored. This data can change according to the club's circumstances. Live data creates a far more interesting and dynamic experience for the users.

GitHub was used for hosting the website and source control. Any changes made to the website code was saved and tracked through GitHub, enabling revisions if necessary. Globally, source control applications streamline collaborative development. In this context, there was no need for collaboration between developers, but it provided the advantages of keeping track of the code and the changes made.

Design Techniques

The design techniques and choices made in the development revolved around AC Milan as both a football club and brand. The color scheme matched the black and red of the club and the fonts used had to appear sleek and classy and elevating the fan experience as they identify with these colors and typography. AC Milan is among the most prestigious football clubs in the world and as such the design had to reflect on that. In the theory sections that were primarily text, ample padding and space were provided to avoid clutter and maintain a consistent and organized layout, making it easy for the users to digest the theoretical content This is contrasted by pages that an image and video based such as the homepage or the history page. The homepage utilizes hero images of the home stadium and famous players and moments, and the history page allows the user to flick through the best moments in the club's history. Pages like these put the images and videos at the forefront and emphasize the importance of them, adding an impactful layer that can evoke emotions in the fans.

In terms of the interface, it remains straightforward and centers its design around the user. User-centered design focuses on creating the interface and any interactable elements with the user in mind and reducing mental strain when they interact with the interface. The navigation menu is easy to understand, and the wireframes are all accessible to the user in the form of a carousel. Theory sections are organized without clutter and data visualizations allow the user

to manipulate the filters and buttons to view the data how they want to, therefore creating an immersive experience for AC Milan fans and users alike.

Meaning and Engagement from UI/UX Designs

The AC Milan website's user interface and user experience engages with the target audience and creates meaning through its use of thoughtful UI/UX design. By adhering to certain UI/UX principles, it makes the website both functional and shapes the user's perception of the website and content.

The interface is inspired by AC Milan as a brand. Its black and red colors are synonymous with the club in the world of football and deviating from this would cause issues among supporters. The cursive fonts for headings signify the class and prestige associated with the Italian club. Remaining consistent with the branding creates a recognizable and engaging identity with the target audience.

Each page has a clear and concise structure that follows a logical order and places the elements that should be focused on the forefront. For example, the home page places significant emphasis on the various images, with supporting text. The wireframe section provides each wireframe design placed in a carousel with a description to avoid clutter and reduce the effort the user exerts in scrolling.

Developing intuitive interactions that place the user at its focus indicates to the user that that their needs are catered towards. Whilst having an easy-to-understand navigation is fundamental in this, the small intricacies play a significant role as well. Subtle designs such as highlighting the page the user is currently on, underlining a heading they hover over, making a button visible enough for the user to notice and entice them to press it. The three click rule states that the user should always be able to find their information in three clicks or less. The data visualizations section perfectly embody this rule, as whether it involves dividing bubbles or filtering information, each can be achieved in less than 3 clicks.

The design of certain sections evokes emotion and curiosity of the user. The home page highlights the stadium of the club and iconic imagery with subtle, yet telling captions and the memories section allows the user to flip through the history book of the club with epic videos and descriptive captions for each. To a football fan, these aspects would tap into their emotions and captivate them as they explore the history of the club but to someone not

familiar with football, the captions, imagery and videography is enough to spark their curiosity and view the next memory video as they learn more about this legendary club.

For the data visualizations, the use of color was important in catching the user's attention and making the visualization legible, given the background colors of the website. A white outline is given to each bubble on the bubble chart to make the color pop and look attractive and the buttons are placed on its own side to avoid clutter. The headings are placed in order of priority as the top 4 teams are placed at the left-top, given that is where the user looks first on the screen. The heatmap is positioned centrally and uses colors based on the ratings of each player. Green is a high rating and red is bad with the colors in between such as orange, yellow and beige filling in the gaps. On the radar chart, the red color is given to AC Milan to signify the clubs' colors and blue is given to the other clubs. It is a color that contrasts with red and the user is able to visually decipher the statistics using the colors.

Role of Interactivity

An interactive website communicates and provides feedback to the user. Interaction not only displays attractive content but compels users to connect with the website and content. As a result of engaging with the content, the time the user spends on the website increases (dwell time). While this is beneficial for branding and conveying information, Google's Analytics tracks the dwell time spent on a website and if it is high, Google will rank it among the top searches. This is in many ways beneficial for any sort of website, whether it be an online shop or in this context, a sports website (Hackett, 2022)

In a general sense the project implements interactive features in minor yet communicative ways. Hover effects are prevalent throughout the website: An underline that appears when hovering over a heading in the navigation bar or an underline that displays on the currently active page. The color changes that occur when the user hovers over a heading card in each index page, provides feedback to the user and adds presence to an index page that would otherwise be static. Button and slider features on wireframe pages and memories pages that give the user agency to view the content they want and for however long they want. Features like these subtly enhance the engagement of the user and create a rounded experience.

Interaction is critical in the field of data visualizations. Data sets are often boring and monotonous when viewed plainly, hence libraries such as D3.js exist, to transform data into

engaging and interactive visuals that create a finer experience for the user, which enables data to be easily understood and digested. A primary component of the data visualizations specific to the website involves sorting the presented data. Users can split each team into their league positions, allowing them to find information such as Top 4, Bottom 3, etc. easier. Interactive elements such as tooltips provide immediate access to the team's name and points accrued. Filter functions are the core of the color map and give users the ability to sort the data to find the information they are looking for. In this case, the players can be sorted according to rating, goals, assists and red cards and their names and the relevant metric is displayed on the tooltip when hovering, therefore encouraging prolonged engagement and interest to explore deeper into the data provided.

These interactive features encourage active participation in exploring the information, whilst ensuring that users are provided with an understanding of the team and its players.

Challenges in development

Initially with the home page, the images were meant to be parallax images with the text on top of the images. The issue that arose from this was that the images were not joining seamlessly, and the background would be visible between images. I scrapped the parallax idea altogether and chose to have separate images in its own section that allowed me to apply the necessary styles to have the desired layout and positioning. Though the latter idea came out better than I had hoped, I would have liked to see how the parallax effect would look.

On the essay section, there is an issue with the iFrame functionality. The essay pdf is displayed, and user can scroll through the pages but the pdf buttons such as zooming in and out, downloading etc. are not being clicked but if the user enters inspect mode on their browser, the buttons work then. I'm not sure what the issue is and how to fix it, as I've tried many things such as using embed tags, adjusting the styling, etc.

The data visualization section was the trickiest section, given how new the topics and concepts were. An issue that stands out was the APIs. Going deeper into the API and running tests to fetch data should have been my first task before deciding on a theme. There are plenty of football APIs, but most have paid subscriptions and plans to access the data I wanted. Specifically, I was looking for data relating to AC Milan or Italian Football but most APIs either provided other leagues for free or the AC Milan data was limited. Doing further

research, I found rapidAPI – an API hub that allows developers to find, test and connect to APIs, using a key provided. This website provides code snippets and examples to run endpoints and test what data you receive. The only thing left to do was find the AC Milan specific ID and league ID and the data was good to go. Once the data was fetched, I had to sort through the data to find the information I wanted specifically. This was challenging but using the functions learnt in class like the map function and realizing the data was one big object allowed me to break the problem down and sift through the data.

We had previously worked with bubble charts in class, but the issue was figuring out the logic to divide the space into four areas and that was it. I divided the svg into quarters and gave each section its own heading and divided the bubbles according to the rank provided in the data.

The color map was different because we had worked with heatmaps, but this was different. I had learnt new concepts such as scaleThreshold, using switch statements in tandem with the data and how to implement a filter. A peer recommended that I create a new array for each player and that array will contain the necessary categories such as rating, goals, assists etc. From this I could then use the sort method for the filter. Most of the issues experienced in this project came from trying to figure out the logic and then putting it into code, thus a lot of researching, googling and trial and error had to be done.

Professional Standard

The practices and methods adopted and used in the development of my website does align with industry standards. Particularly the use of APIs and manipulation of data. Oracle outlines in a recent article how APIs are becoming integrated in almost every industry, given the digital transformation of the global economy and industries want to rely on accurate and live data, especially in the context of sport websites that use live data to constantly track football teams around the world simultaneously. (*Oracle is Driving Innovation Across Industries with APIs*, 2024)

Oracle article: https://www.oracle.com/za/cloud/cloud-native/api-management/industry-apis/

The code is written in modules with appropriate semantic tags encasing each snippet. The functions are commented on before explaining what it does and on certain lines as well to provide more in-depth detail. This assists in collaboration with other developers to make it easier for them to understand the scripts and not exert effort in figuring out the code. Keeping on collaboration, the development of this website used GitHub extensively and each major change made to the code was tracked, allowing for revisions if necessary. This experience in source control is vital in industry standards when large scale projects consist of numerous developers simultaneously working together.

As aforementioned, the interface design is centered around the user. Industries focus on the user interface to provide an enjoyable experience to the user because a good experience often means they are drawn towards the brand and the product and are likely to become a customer. Accessibility is featured within this user-centric design, as certain elements such as alt text on images assist with special needs technology and allow people with impairments, using screen readers to still interact with the website.

Word Count: 2638

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