

CS 416: Data Visualization (formerly CS 498)

Narrative Visualization Assignment

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- **Messaging:**

What is the message you are trying to communicate with the narrative visualization?

Answer: Football is a very popular sport which came into existence since 1869. We have different Magazine's who published the ranking of players on yearly basis but according to common people perspective, these magazines are biased on basis of advertisement and endorsements. Our objective is to create a framework which describes their number of shots, goals, number of matches, expected goals average, number of targets and other important features so people can review those and get the understanding.

I have created 3 charts in the Narrative Visualization. I have used the data between 2016 to 2020 to create the charts. Below is the description:

1. First chart positions the players on basis of number of shots and goals they have hit.
2. Second Chart includes the expected goals average per match and size of circle is changing on basis of the Average.
3. Third chart includes the average target hit per match. I have divided the players into 3 categories and adjusted the color of circle on basis of the feature.

- **Narrative Structure:**

Which structure was your narrative visualization designed to follow (martini glass, interactive slide show, or drop-down story)?

Answer: In this narrative visualization, I have followed the interactive slideshow design.

How does your narrative visualization follow that structure? (All of these structures can include the opportunity to "drill-down" and explore. The difference is where that opportunity happens in the structure.)

Answer: I have created multiple slides from which first slide(chart) is based on two parameters (shots and goals) and in the further slides we have used more parameters to represent their position in the chart. We have drilled down the features such as player's average expected goals parameter and target hits per match. Both these features are important to understand the capabilities of a player. I have used tooltip feature which describe other details such as Matches played etc.

- **Visual Structure:**

What visual structure is used for each scene?

Answer: I have created scatter plot in all charts, but I have changed the radius of circles and colors to add the feature characteristics in every chart.

How does it ensure the viewer can understand the data and navigate the scene?

Answer: I have created the navigating buttons for the user's understanding and each button is labeled with the titles and information stored in the respective chart. With every chart, the level of information has increased. For e.g. First chart just talks about the shots and goals, but second chart talk about shots, goals and Average and third chart talks about shots, goals, average and the conversion.

How does it highlight to urge the viewer to focus on the important parts of the data in each scene?

Answer: In each chart, X and Y axes are labelled in the proper way and I have created constant annotation to explain the description of every feature and to mouse over each data point check details of each player. I have also added the meaning of each color in the third chart with proper details.

How does it help the viewer transition to other scenes, to understand how the data connects to the data in other scenes?

Answer: The buttons are created above the charts which describes the content of each chat. The first chart is based on 2 parameters and second chart has the features of 1st chart but also includes the other parameter and so does chart 3rd.

- **Scenes:**

What are the scenes of your narrative visualization?

Answer: I have created 3 scenes. Below are the details:

1. I have positioned the players based on the number of shots and number of goals.
2. In second chart, I have increased the size of circle on basis of their expected goals average per match.
3. In the third chart, I have changed the color on basis of their target hits per match. I have divided the players into 3 categories (more than 2 target per match average, more than 1 target per match average and less than 1 target per match average).

How are the scenes ordered, and why?

Answer: Scenes are ordered in below order:

1. I have positioned the players based on the number of shots and number of goals.
2. In second chart, I have increased the size of circle on basis of their expected goals average per match.
3. In the third chart, I have changed the color on basis of their target hits per match. I have divided the players into 3 categories (more than 2 target per match average, more than 1 target per match average and less than 1 target per match average).

- **Annotations:**

What template was followed for the annotations, and why that template?

Answer: I have used the text-based annotations. Text based annotation template uses line and text to highlight the information on the chart to convey the message to the user on the scene.

In the Chart 1 as you can observe, Messi has scored the Maximum number of Goals. The ranking of player depends on multiple factors but number of Goals is a important parameter in first chart so I wanted to highlight this particular player.

In the chart 2, I have highlighted Player Robert Lewandowski because he has scored the best average and average is an important parameter of second chart.

In the chart 3, Multiple players have scored more than 2 targets per match, so I have not used annotation.

How are the annotations used to support the messaging?

Answer: This visualization is based on ranking of the world greatest footballer and multiple magazines have published ranking on time-to-time basis. Objective is to showcase the achievements of different players in an interactive way. For each chart, I have used the annotation to support the important parameters of the charts.

Do the annotations change within a single scene, and if so, how, and why?

Answer: No, annotations are not changing in the single scene. I have used the annotations just to showcase the players name on basis of the important feature in the chart so changing of annotations were not needed.

- **Parameters:**

What are the parameters of the narrative visualization?

Answer: Following parameters are used in the narrative visualization:

1. Number of Shots hit by players.
2. Number of Goals hit by players.
3. Average number of Expected Shots.
4. Average number of targets hit per match.
5. Matches played by player.
6. Minutes played by player.

What are the states of the narrative visualization?

Answer: Following are states of the narrative visualization:

1. State 1: It positions the players on the basis of the number of shots(x axis) and number of goals(y axis). Each player is represented by data point "circle"
2. State 2: It positions the players on basis of number of shots(x axis) and number of goals (y axis). This scene also includes the average number of expected shots which is represented by the "size of circle"
3. State 3. It includes all the features of state 2 but also includes the feature of average target hits by player in each match. It is represented on basis of the "color of circle".

How are the parameters used to define the state and each scene?

Answer::

1. State 1: It positions the players on the basis of the number of shots(x axis) and number of goals(y axis). Each player is represented by data point "circle"
2. State 2: It positions the players on basis of number of shots(x axis) and number of goals (y axis). This scene also includes the average number of expected shots which is represented by the "size of circle"
3. State 3. It includes all the features of state 2 but also includes the feature of average target hits by player in each match. It is represented on basis of the "color of circle".

- **Triggers:**

What are the triggers that connect user actions to changes of state in the narrative visualization?

Answer: The main trigger that connect user actions to changes the state the narrative visualization are button/triggers at the graphs and the information to hover over the data points to see the additional tooltip information.

In the first stage, I have created the graph based on number of shots and goals. The button is clearly stating the information. For the second button and third button, it clearly states that we have added additional parameter "Average" and "conversion" into the graph. I have also clearly explained the meaning of average below the button's so user will get adequate amount of information and interest to check the charts.

What affordances are provided to the user to communicate to them what options are available to them in the narrative visualization?

Answer:

- Below the buttons, it is mentioned as "Hover the mouse over data points for more details" to see the details about each player.
- Below the buttons, the information about the chart is given which also states the meaning of parameters used in the chart. As soon the user will click on button, the information will appear.

- In the second chart, the radius of circle is changing on basis of the average value. The text information below the buttons are stating the meaning of radius change.
- In the third chart, I have categorized the players into 3 categories and constant annotation describes the meaning of each color.