

# 573 Final Proposal

## Visualization of Soccer campaign history From 1872 to 2017

### Basic info:

- Team Members:  
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- Project link:  
<https://github.com/smalljjack/cs-582-DV-final-project>

### Background and Motivation:

All three members in our team are soccer fans, which most inspired us to choose this type as our project. During our search of the dataset, we encountered the soccer results dataset and became interested in this immediately. Russia will host the FIFA World Cup in 2018, and it is coming soon. So we hope to help more people gain interests of soccer and learn more history about the soccer game by using this project.

### Project Objectives:

In terms of the upcoming FIFA World Cup in Summer 2018, which team will win the final champion? During the history, which city is the most difficult for guest teams? Which country did well in guest places but not good at playing at home? During the history, check if there are some teams that is particular afraid of certain teams, and check this with common sense, for example, German national team is afraid of Italy team.

What We would like to accomplish?

Ability to analyse a dataset when this dataset is not that well organized.

Data processing skills using different tools, such as JavaScript, Python

### Data:

- Link: <https://www.kaggle.com/martj42/international-football-results-from-1872-to-2017>
- Description:  
This dataset includes 38,759 results of international football matches starting from the very first official match in 1872 up to 2018. The matches range from World Cup to Baltic Cup to regular friendly matches. The matches are strictly

men's full internationals and the data does not include Olympic Games or matches where at least one of the teams was the nation's B-team, U-23 or a league select team.

The data csv file includes the following columns:

- date
- home\_team
- away\_team
- home\_score
- away\_score
- tournament
- city
- country

### **Data Processing:**

This dataset has already contains everything we needed to do the visualization. But this is the reason that this dataset must be processed before using. First, in terms of winning rate for different kinds of games, we need set Win or Lose or Defend based on the score. Second, this dataset gives city, but did not provide altitude and latitude so we must find a way to map the city with altitude and latitude or coordinates so as to mark it in the map. Third, It will be convenient for us to fist do some classification based on the year, country. So we can have all the gaming data when selecting a specific year or year period, or the game results for a specific national team in some year or year period. The dataset will be processed using either d3 and Python.

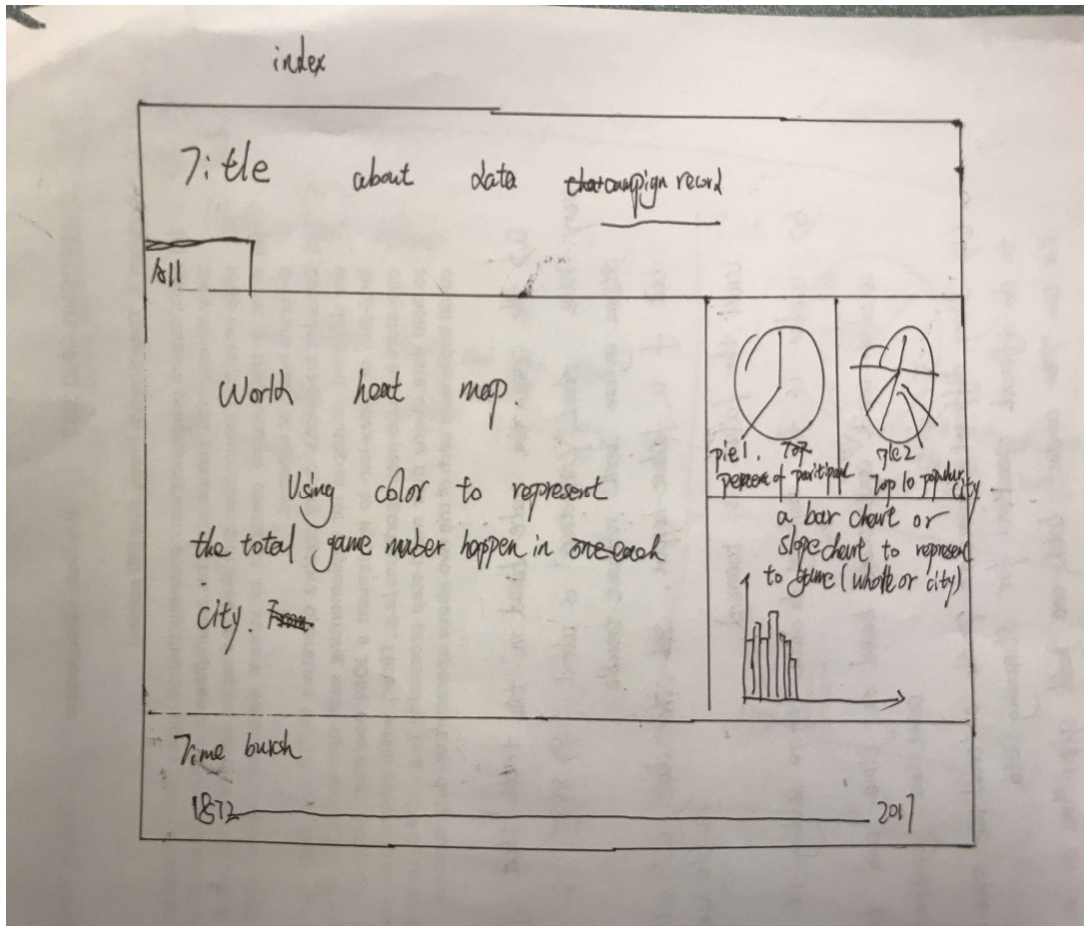
### **Visualization Design**

Our project is consisted by 2 separate parts. Each part will visualize data in different combination and to accomplish different goals.

- Part one - Campaign History Heatmap

The goal of heatmap is to show the trend of international soccer campaign. The are 3 main components in the campaign history heat map. The three components are one world map, one pie chart, one bar chart and timeline selector. The three component should have the ability to interact with each other which means any change made in one component will influence the other two's view as well.

### **Default View**



- selector:

There is a selector on the top of the map. You can filter data by choosing campaign type. For example, select the FIFA world cup, then the filter will choose only FIFA world cup campaigns. And views of both the map and charts will be change based on your selection.

- Timeline selector:

There is a time selector on the bottom of the page. By using the brush, you can filter data for specific time. And views of both map and charts will change views based on your selection time.

- Map hover:

When you move your mouse on specific area or county in the map. A title frame will show up, the frame give you information about the team and it's campaign records based on your selection time and campaign type.

- Map click:

When you click on specific area or county in the map. The pie chart and bar chart in the left page will show data for your selecting county. The pie chart shows the campaign number between your selecting counties and other countries, the bar

chart shows the each year's campaigns number of you selecting counties in the selecting time.

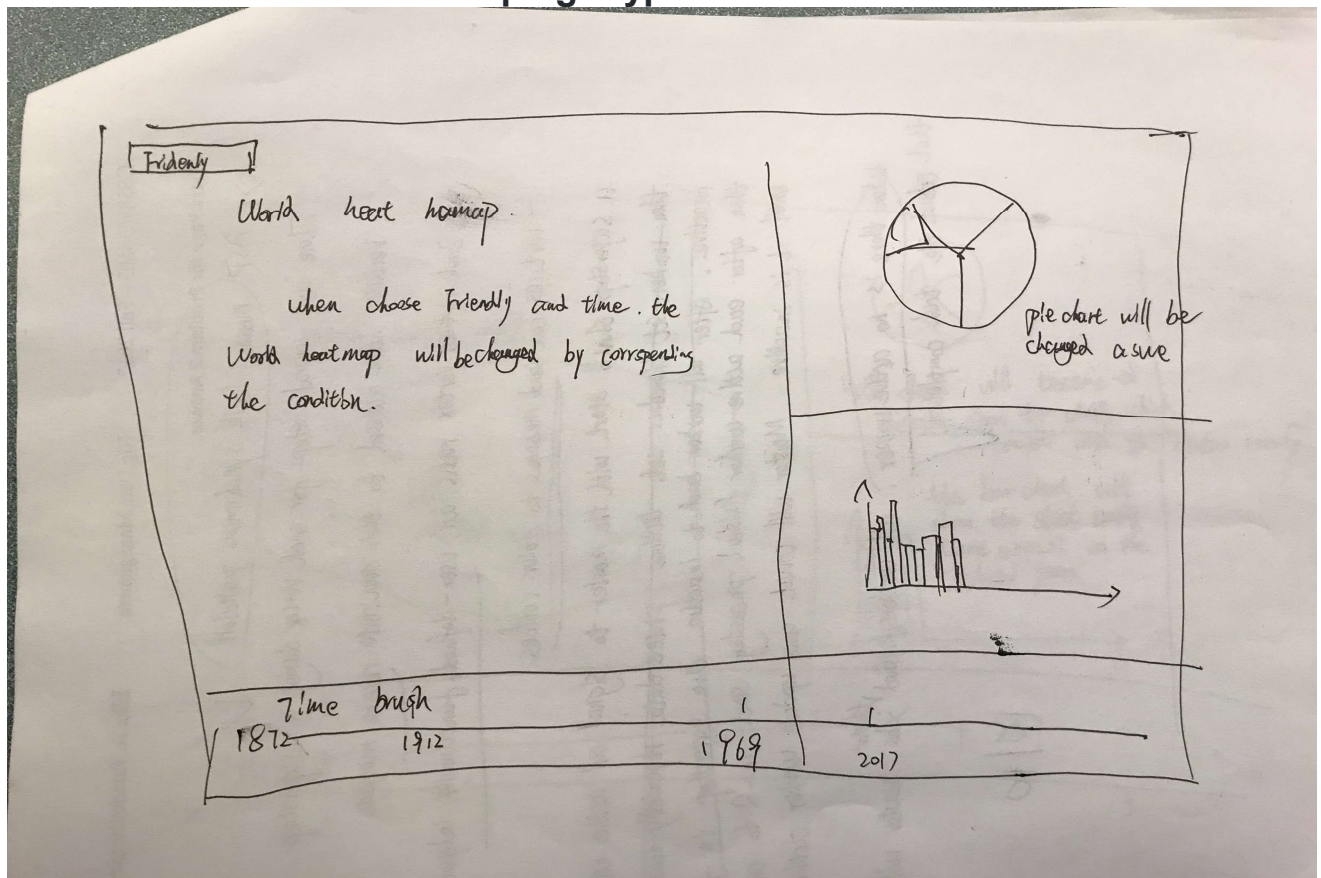
- Pie chart:

Default view of the pie chart shows the top 10 countries which has most compagin records from 1872 to 2017. But its view will be change accompany with your interactions. For instance, if you use the time selector to select time from 2010 to 2017 and game type selector to Friently and click England on the map. It will show the Friendly campaigns data which are between England with other countries from 2010 to 2017.

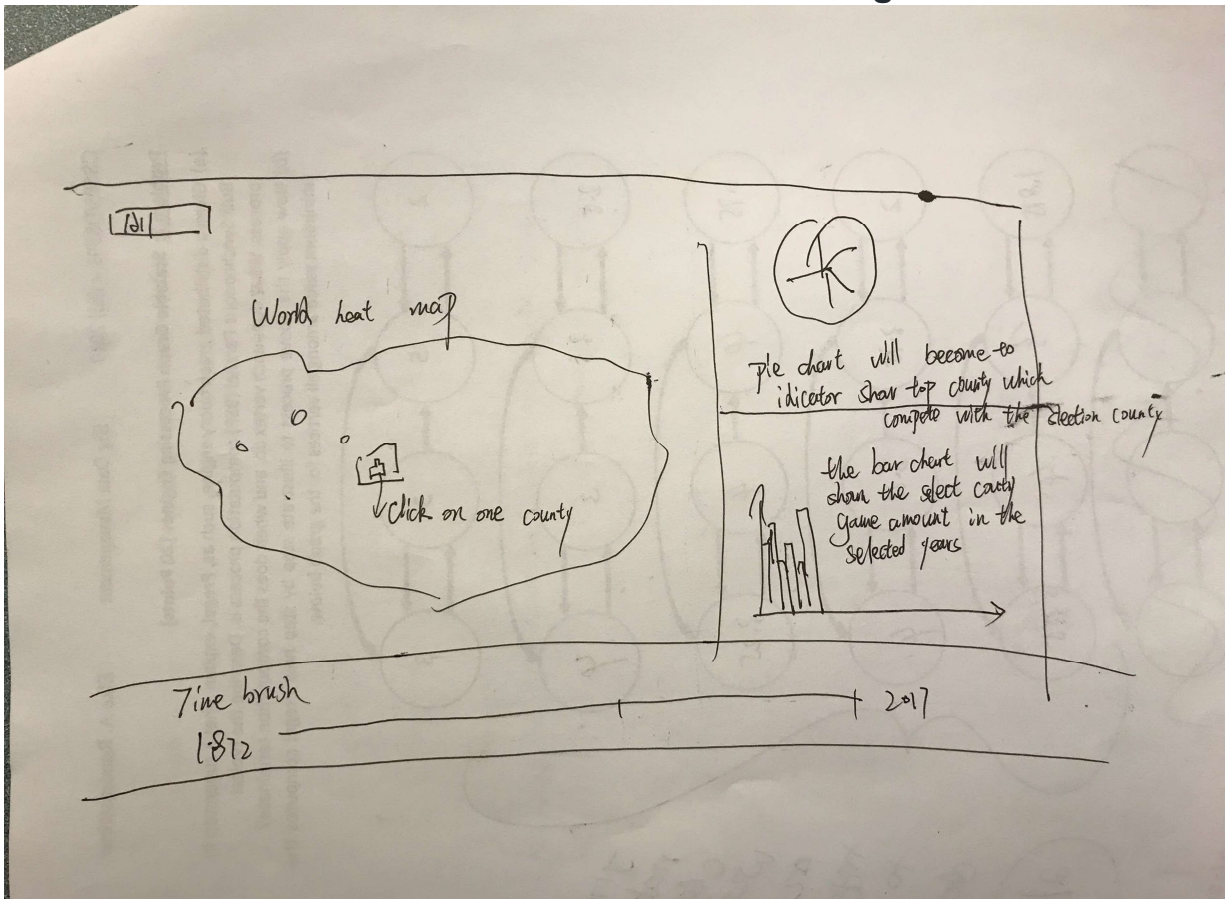
- Bar chart:

Default view of the Bar chart displays how many campaigns have been played in each year from 2000-2017. But you can change its view by using timeline selector, campaign selector and map click selector function. For example, move the timeline selector to 2010-2017 and click on England on the map, the bar chart will show how many campaign have been played in England in each year from 2010 to 2017

## Campaign type selector



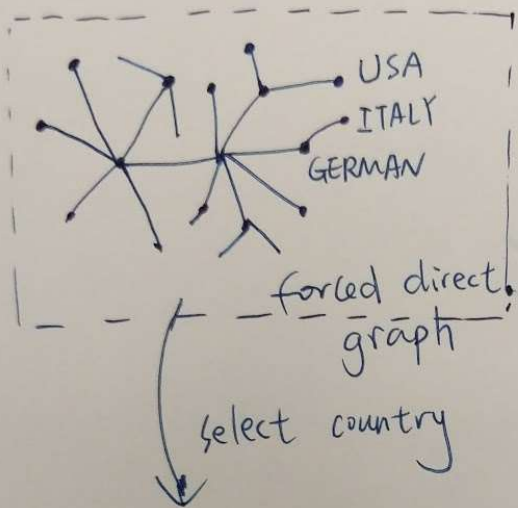
## Select time from 1970-2017 and England



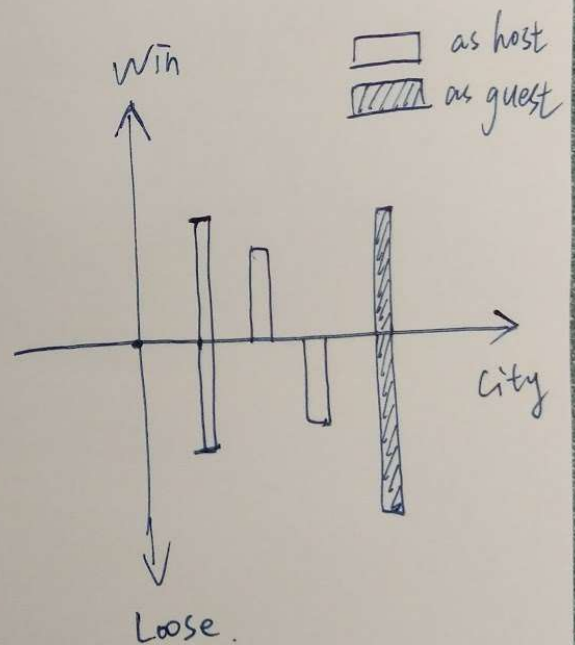
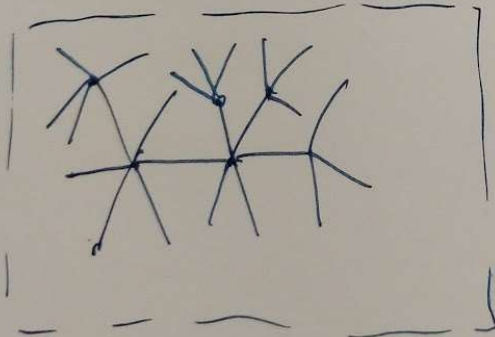


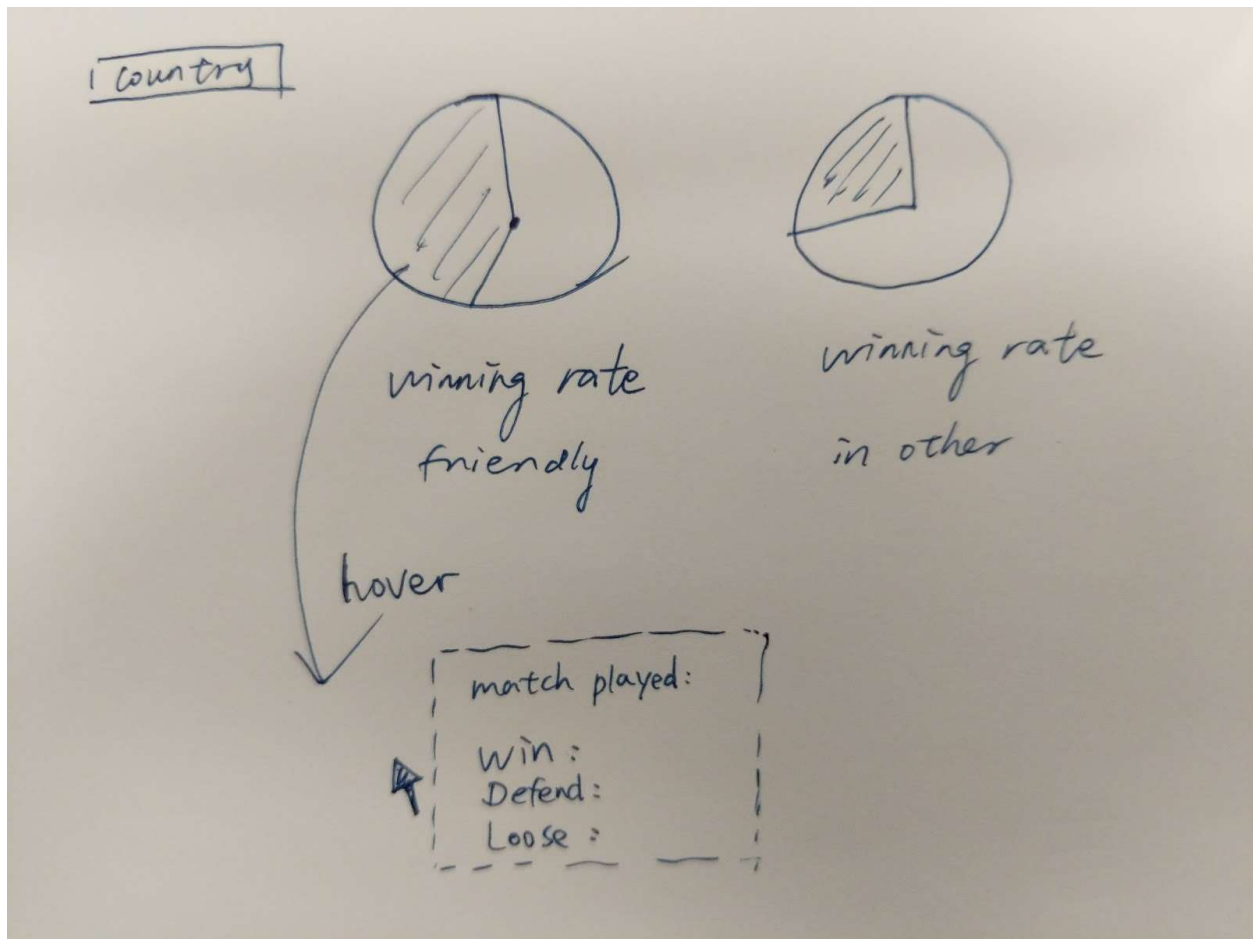
- Part two:

Year to Year



Year to Year





The second part consists of a force directed graph and bar graph with selector selects year. When selecting the year, the forced directed graph will display every game in the year selected. Upon selecting the dot in the forced directed graph, the bar chart will show the number of winning and losing in each city that this national team visited or hosted. Shaded bar indicated that current selected national team played the game as guest team.

Second part also has two pie charts and selector to choose country. The pie charts will show the winning rate for this country of friendly game and other games. The mouse hover shows the detail.

### Must-Have Features:

Because there are separate parts in our project, and each of them will be consisted by different components. Subsequently, each part will have several necessary components to satisfy the visualization.

- Part one - Campaign History Heatmap

The part one mainly is built by one zoom map, one pie chart, one bar chart and Timeline. All the four element will be the must-have feature for the part one

visualization. Additionally, the interaction among the four components are also necessary. Basically, the part one should at least achieve four interactions

1. Color as the indicator of the map should be changed based on the selecting time.
2. Pie chart will be changed based on the selecting time and selecting county.
3. Bar chart will be changed based on the selecting time and selecting county.

- Part two – Team record

1. Force directed graph
2. Upon selecting each country in force directed graph, showing number of winning and losing games for cities.

### **Optional Features:**

Some elements could help us to achieve better visualization effect, but are not necessary.

1. Detail window. When you click on county or area on the map, a detail window will appear and give you more information about the soccer history of your selecting county.
2. Path which connect different county to represent each campaign.
3. Play function - animation of campaign sequence.

### **Project Schedule:**

- 17 Feb. Discuss project layout, main component, logical interaction. Finish data processing.
- 18 – 21 Feb. Finish the prototype for the three parts.
- 22 – 23 Feb. Assemble the three part, finish the prototype.
- 24 – 27 Feb. Adding optional function feature, record video, write document and process book.
- 28 Feb. Final project submission.