

# Insights in European league soccer players transfer

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## Overview and Motivation

Enjoying watching the European soccer league games, we want to visualize data about soccer to show the trend of soccer's development. Since there have been many research about the outcome of games, we decide to exploring our data from another perspective: the transfer market which reflects not only the loyalty of players in a team but also the development of leagues or teams. Our topic is the European league soccer transfer, containing two levels, which are league and team, and two perspectives, which are the number of transfer players and the amount of money has been spent.

Appreciating to the visuliazation class, we have learnt not only technical method but also many concepts and criterias of visualization. Based on the concept “overview plus detail”, we build our visulization in two views, intuitive insight of the data set and more accurate qualitative details.

## Related Work

## Question

The following questions have been answered on both league level and team level:

- What are the transfer relationships between leagues or teams?
- What is the transfer tend?
- How many players have been transferred in given year or given period?

The following questinos have been answered on team level:

- Which teams have transfer transactions with a given team or some given team?
- What is the order of teams sorted by the number of players transferred with (in or out) a given team in a given year or period?

## Data

Our data comes from Kaggle European Soccer Database, and the link is [here](#).

The data set contains 11 European league, more than 25000 matches and at least 10000 players from season 2008 to season 2016.

The form of data set is several tables in sqlite database, so we plan to join the tables to get which player belongs to which team from year to year, then we can know the trasfer of players.

# Exploratory Data Analysis

## Design Evolution

Our initial design contains three charts: a chord diagram, a force direct diagram, and a line chart. We chose chord diagram to show transfer relations between leagues, since this diagram is concise and space saving, comparing to our another design where a league column has been doubled and lines are drawn between two columns such like links between levels in neural Networks. The scale is added outside the circle to avoid the quantitative shortage of the circle.

According to class vertices and edges can show relationships, the force direct diagram has been chosen to express the transfer relationship between teams. We plan to zoom in a team to show the name and the transfer numbers of that team, which is discarded in our final according to TAs' suggestion and more function has been added in this chart which will be introduced latter.

We plan to use a line chart to show the trend of players transfer for each league. A line stands for the number of players who transfer into this league and another line is the measurement of the number of players in each league, which comes from subtracting transfer-out players from transfer-in players. The distance between two lines represent the number of players who transfer out from this league. In final design, we add an acumulative line chart in reference to the website of baby name shown in class when two or more leagues have been choiced. Moreover, in order to better reflect the mobility of players, we use sum of the number of player transferred in plus transferred out as the upper line and the number of player transferred in as the lower line, and the number of player transferred out can be read by the distance of two lines.

Additionaly, we plan to add year brush to facilitate choosing a year or a period containing multiple years, and add logos of leagues help us choice a league easierly. These designs are both applied in our final design.

We have two optional charts. One is a table which show the top ten players who has the most number of transfer times and the other is a map which show the transfer trace of a player selected from the table. The optional charts are not included in the final design, since we decided focus on the transfer in leagues and teams level and based on the TA's suggestion adding the money information is more useful than our optional designs.

Our initial design can be seen in Figure 1 and Figure 2.

We applied our design as Figure 3 and Figure 4. The chord diagram is following our original idea. The number of transferred players can be read from the scale outside the circle as well as the tooltip. When mouseover, the link become highlight and other links become light grey. As to force direct diagram, we can get the transfer relation of teams not only within a league but also among different leagues.

In this version, we can either moseover the edges or select the arc of multiple leagues from diagram 1 to filter out the teams in corresponding leagues for diagram 2, and the selected teams are distinguished by highlighting the vertices and edges of these teams and making other teams become translucent. However, as we can see, the force direct diagram looks pretty messy. Too many teams (around 200 teams) interfering with the transfer relationships of the teams we want to inspect.

Besides adding more interaction with other charts, there is no large change in chord diagram from initial design.

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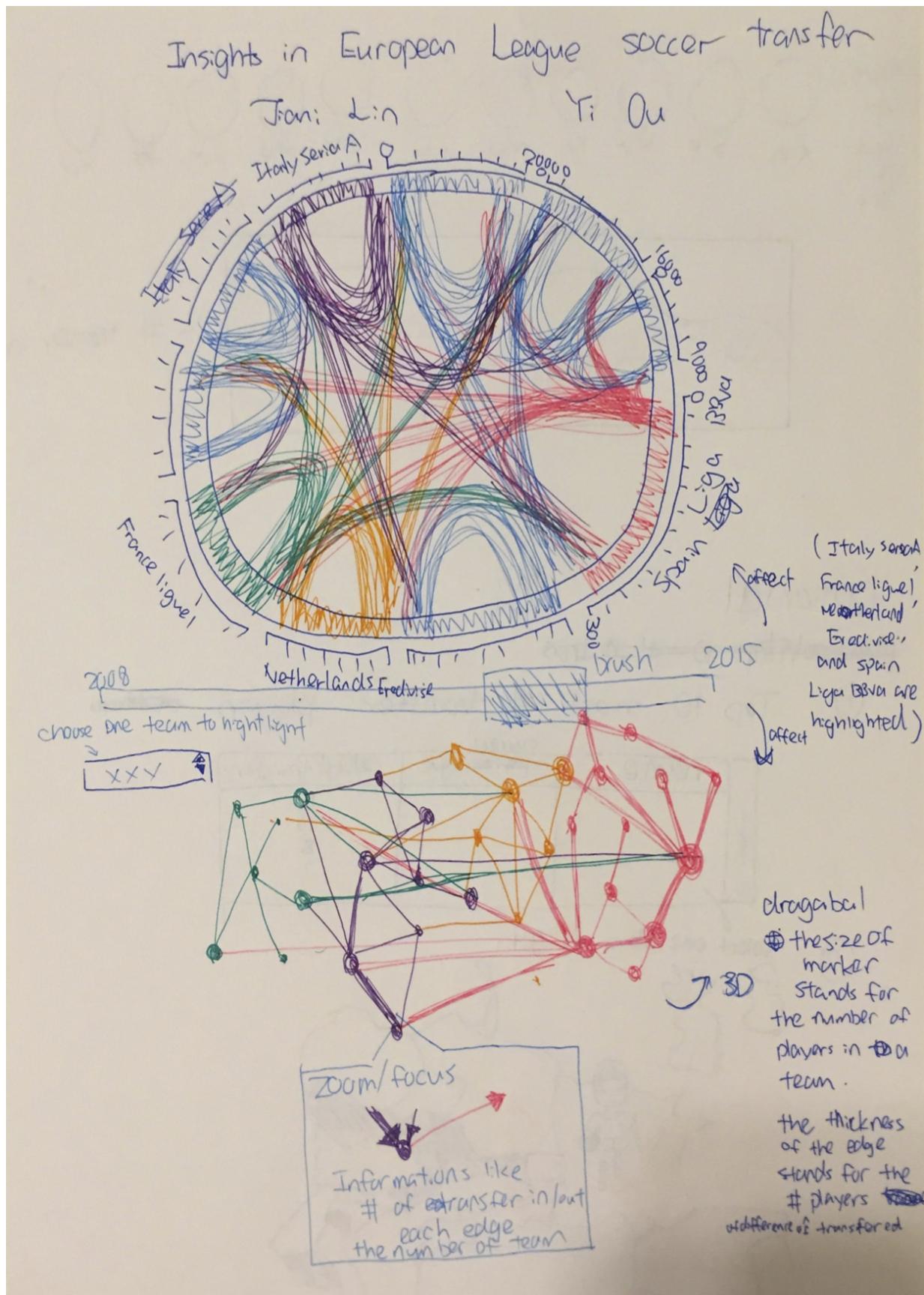
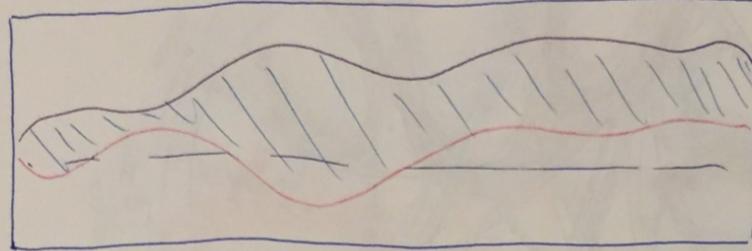


Figure 1: Page 1 of our initial design  
3

league →  
 logos  
 choose  
 one to  
 get :



- # in-out  
 - # transfer in

Optional:

~~player with top 10 # transfers~~

① Top 10 most # transfer players ~~selected~~

	name	current league	# of transfers
1			15
2			10
3			8
...			?
10			

② select one player to get:



Figure 2: Page 2 of our initial design

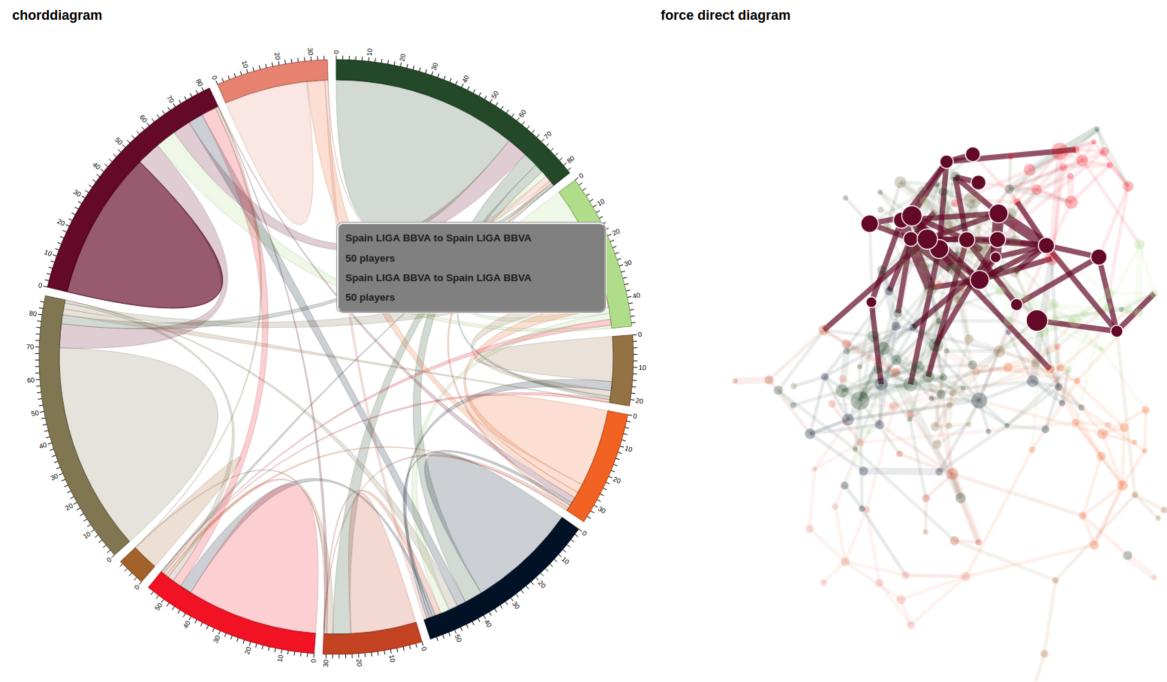


Figure 3: figure1

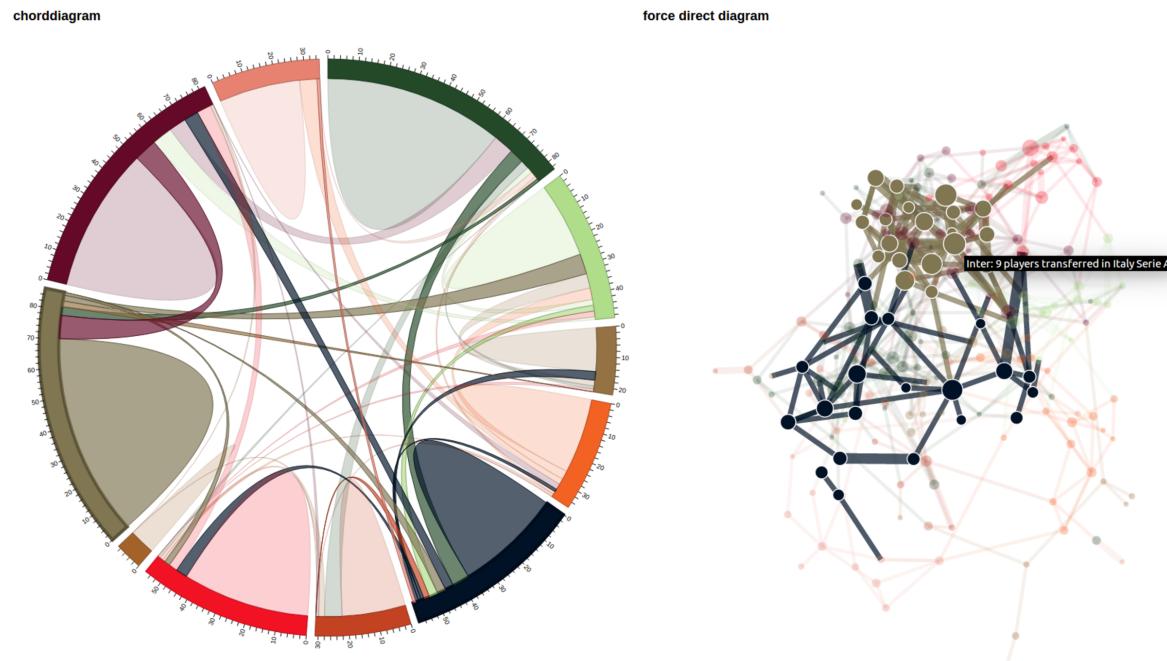


Figure 4: figure2

**Implementation**

**Evaluation**

**Conclusion**

**Reference**