CIS-602 Visualizing Data

Final report

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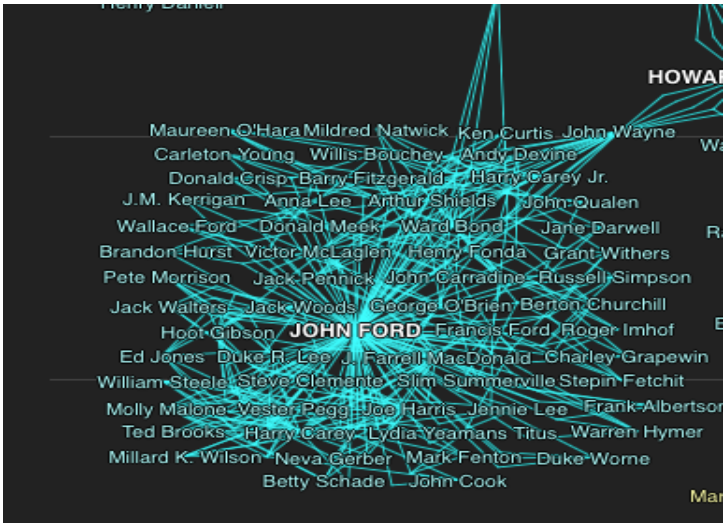
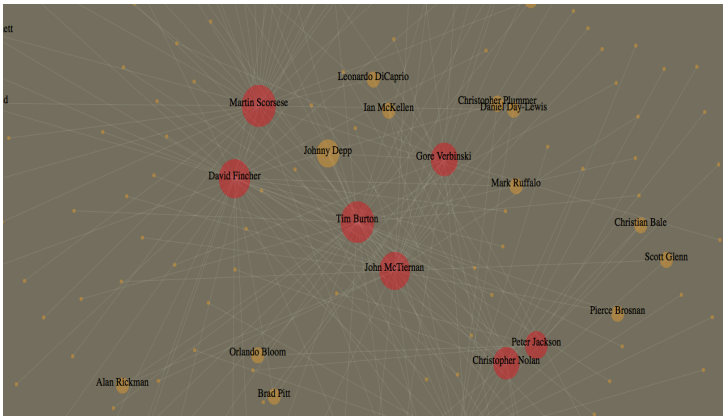
Motivation: Nowadays, film has become an indispensable part of our lives. People enjoy when they watch different kinds of films, actors/actresses. We all know there are lots of film categories. Some directors just focus on one or two kinds of films, let's say action, and also some actors are good in it. As well as audiences, some like horror movie others like comedy. However, how are the actors/actresses related to the director? How could we know if a movie is worth to watch or not based on our previous experience? With these questions, we plan to make a website describing the relationship between directors and actors. Moreover, based on studies and researches, representing data as a graph has become easy for people to understand and absorb more information and memorize it for long time.

Related Work: "Collections of directors and their stars" [1] is a website describing long-running time relationship between and an actor and a director. They believe such relationship could indicate an artistic understanding, a functional routine or even a marketing strategy. So they established several graphs with each one of them describing one director and several actors. In other words, the number of graphs equal to the number of directors. Each edge in their graph represents one movie. So how many movies they collaborated decide how many edges between them. Social graph has been referred to as "the global mapping of everybody and how they're related". [1] A screenshot is shown below.



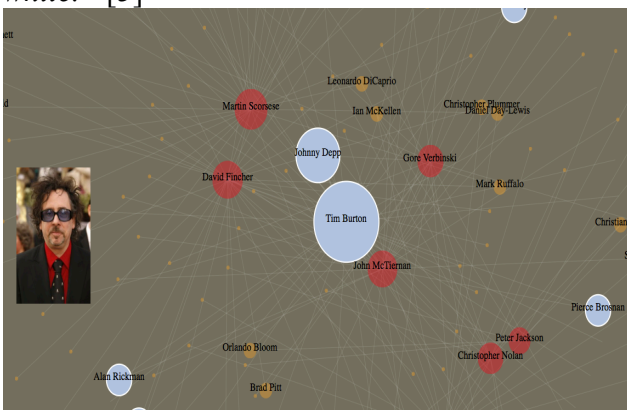
But it seems not obvious and confuses the users. To make it more clearly, we decided to use distance to represent the relationship between director and star rather than the number of edges. By using a distance between nodes, our final result has become to the figure below.



Visualization: "Force-directed graph drawing algorithm are a class of algorithms for drawing graphs in an aesthetically pleasing way." [2] Graph, in computer science, is an abstract data type consists of nodes and edges. We chose this graph

because of its clarity to represent the idea.

Method: We collected about 100 movie's information from IMDb. [3] The tool we used to implement this graph called Force layout in D3. [4] The size of the nodes depends on how many stars/directors this director/star has worked with. Here we used D3 linear scale to make the director node's radius between 20 to 30px and the star node's radius between 5 to 20. Each edge connects one director and one star. The length of the edge represents the relationship between these two people (The shorter the length the more collaborations they did). Also, we used D3 linear scale to take care of the distance. When mouse hover a director node, the graph will highlight the stars which have collaborated with this director and vice versa. By highlight, we mean the size of the node becomes larger through animation and the color becomes to steel blue. The highlighted node is shown below. *When highlighting text by changing the color of the font, it is important to maintain luminance contrast with the background. With a white background, high-saturation dark colors must be used to change the font color. Alternatively, when changing the background color, low-saturation light colors should be used if the text is black on white."* [5]



Future Work: In this project we have chosen to visualize the relationship between directors and stars based on how many movies have they collaborated with each other. As a result we came up a graph that represents the work using D3, java script, CSS, HTML, and Database technics. In the future, we will provide a search function for users to find the information they want quickly. Also we plan to implement expand and collapse function, which means when user clicks on a node, it will collapse all the nodes which are connected to it to allow users focus on the information they want.

References:

[1] Collections of directors and their stars, [Online]. Available: http://www.nytimes.com/newsgraphics/2013/09/07/director-star-chart/.

[2] Force-directed graph drawing, [online]. Available: http://en.wikipedia.org/wiki/Force-directed_graph_drawing#Advantages.

[3] IMDb, [online]. Available: http://www.imdb.com/.

[4] D3, [online]. Available: http://d3js.org/.

[5] Colin Ware. Information Visualization, Third Edition: Perception for Design (Interactive Technologies). Morgan Kaufmann, 2012. Print