Visualization of Game of Thrones Characters

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Abstract

The visualization of the data makes it easier for the user to analyze and observe the data in an easier and interactive way. The motive of this visualization is to enable the user to find the roots of the main characters of the TV show Game of Thrones.

1. Introduction

Game of Thrones is an American fantasy drama television series created by HBO with one of the biggest cult following ever seen. In this visualization the user can explore the religion, race and house allegiance of each character. The user can also search any religion, race,house or character using the search(drop down) button. The links of the tree will define the roots of the character.

2. Data

The data used in the assignment is available on kaggle and could be downloaded from there. The data set contains all the main characters of TV show and their features. The data set contains 54 rows and and 13 features. other than character name other used metadata are culture, religion, house allegiance, URL of the image are available. Some unused features are sex, name of actor, status(dead/alive) etc. are also present.

2.1. Data Pre-processing

The data which is available on-line is in CSV format. The CSV was first converted to json file first using a python script. The CSV also has multiple links for a single character for e.g.

1- Tyrion Lannister- House Lannister, House Targaryens.

This will create a issue in collapsible tree as one node can not have multiple parent node. To overcome this issue, knowledge(expertise) of the show is used. Features like status, sex, number of episodes are left out purposely. Further each row has to be divided by group-by 3 times according to the the tree structure. The target json file is of form name and children signifying the parent and child node respectively. Each child node should have a name, icon- which is the url of the image and further child nodes. The csv only contains the url of the character's image and thus url of the other nodes are added manually to the json file. The concluded json file should be of the form:-

name: ""

icon: ""

children:

name: ""

3. Visualization

Data-driven Document(D3.js) is used in this visualization. D3.js has wast options of interactive options. D3.js also has one of the biggest open source library and in-built functions which makes the task of choosing and assignment of variables much easier. It works seamlessly with existing web technologies, and can manipulate any part of the document object model, it is as flexible as the client side web technology stack (HTML, CSS, SVG). This gives it huge advantages over other tools because it can look like anything you want, and it is not limited to small regions of a webpage like Processing.js, Paper.js.
The visualization used in this assignment is a collapsible tree with image URL, auto-adjust size,a tool-tip mouse hover and search down options, the said combination has not been used(as per my research) as of now and thus this assignments combines these 4 functionality in one.

3.1. Collapsible Tree structure

The collapsible tree structure follows the generic tree structure with additional functionality of collapsing the links. Each node has parent and child node and spreads out till the end node.
Due to least number of groups of feature religion, it used as the first grouping parameter. Subsequently Race, House allegiance are used for further grouping till we get the character name. Each node except the parent node can be searched from the search option either by typing or by choosing from a drop down list. The highlighted(color encoded) link will show the path of the searched link.

The mouse hover capability with the tool-tip box allows the user to zoom-in the image of the node with it's name.

Figure 1: *Collapsable tree showing link of Bronn*

4. Visualization task

Each link shows the relationship with the subsequent layer of nodes in the tree to achieve this following viz tasks are used:-

1-Categorize: First the data has been categorized based upon the features religion, culture, house allegiance in the same order.

2-Clustering: The characters are clustered using the above categorization. For e.g. Arya Stark is clustered into stark first then northmen then into Old god of the forest.

3-Association: The relationship between the parent and child node is set-up accordingly. For e.g. arya stark in child of Stark which is child of Northmen and so on.

5. Visual Encoding

Visual encoding is a set of design choices to make the data more interpretable to the user.

1-Color: Each selected link is differently colored making it easier for the user to identify. The text selected also changes its color for easy identifications.
No other encoding channel has been used in this assignment.

6. Visual Idioms

1- Manipulate: The User can select any node or character as well as navigate across the nodes using mouse click.

2- Facet: As soon as the user hover the mouse over the node, the tool-tip box superimposes over the node.

3- Reduce: The user can select a single house thus filtering out the whole visualization. Also the data is embedded into categories, further linked via parents and child links.

7. Strength and weakness

The major strength of the collapsible tree structure is that it can easily show the relation between different hierarchal data. The whole structure is pretty simple concept but is highly interactive. It helps user to directly visualize the roots of the character rather than going over the whole data. Also a pattern can be easily found out using the hierarchy like all the Starks are categorized in Northmen Race. The search features helps the user to directly select or search the character about which he/she wants to know.
The major drawback of the the whole technique is it's in-capability of cross linking a child node to two parents. A character for e.g. Jon Snow might have allegiance with both House Stark and House Targaryen(major blooper) but this cross linking is not possible in collapsible tree.

8. Conclusion

The visualization successfully links the data in a unique way. The link between the parent and node is easy for the user to understand. The search feature and the mouse hover tool-tip box opens up the new possibilities and can be further expanded to a whole new link of some fan-page which will help user to know the whole details of the node.
Although the collapsible tree has been used a lot of times but in this assignment collapsible tree with node-image, search option, and a mouse hover tooltip box has not been implemented into one.

9. Links

The link of the video of the visualization is:-

https://drive.google.com/open?id=15I61IDGlsJYQneiyKQFsC2qIH9XXWdIC

The interactive visualization is deployed on AWS and can be opened with the following link:-

http://ec2-52-51-188-114.eu-west-1.compute.amazonaws.com/

The whole repository with json file and data is available on the github repository:-

https://github.com/bhatnagark/Data-Visualization

10. Reference

1-https://goo.gl/EeN7qL - Data source
2-https://goo.gl/6WTcZs - collapsible tree
3-https://goo.gl/9aHB9c - tooltip box