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Social Network Analysis

Gephi Star Wars

Visualize the communities of the characters of the 'Star Wars' saga

At first, the star_wars.gephi file is opened using gephi. To measure the degrees of the nodes, the Average Degree is run and 7.236 average degree is found. Then the nodes are resized by clicking the Nodes -> Size -> Ranking and selecting the Degree. The network's diameter was found to be 6.

The 5 people with the highest PageRanks are Anakin(0.043063), Obi-Wan(0.3856), C-3PO(0.035636), Padme (0.033873) and Luke(0.0287672).

Id	Label	PageRank
17	ANAKIN	0.043063
4	OBI-WAN	0.03856
21	C-3PO	0.035636
14	PADME	0.033873
64	LUKE	0.028794

Table 1: Top 5 PageRank Nodes.

The 5 individuals with the top closeness centrality are Obi-Wan(0,556701),), C-3PO(0.553846), Anakin(0.542714), Luke(0.519231) and lastly Han(0.509434).

Id	Label	Closeness Centrality
4	OBI-WAN	0.556701
21	C-3PO	0.553846
17	ANAKIN	0.542714
64	LUKE	0.519231
70	HAN	0.509434

Table 2: Top 5 Closeness Nodes.

As for the betweenness centrality values, the individuals with the highest are the same with a different order. Obi-Wan 1253.11, then C-3PO 1134.11, Han 1066.63, Anakin 954.54 and Luke 811.218041.

Id	Label	Betweenness Centrality
4	OBI-WAN	1253.114204
21	C-3PO	1134.119476
70	HAN	1066.633822
17	ANAKIN	954.537559
64	LUKE	811.218041

Table 3: Top 5 Betweenness Nodes.

The communities were found with the Modularity under the Community Detection, which was found to be 0.452. Then by going to the Nodes -> Ranking the modules were colored by community by selecting Modularity Class.

The favorite character that was selected was Mace Widu since he was my favorite character of the Star Wars saga. Here, by going to Filters -> Topology -> Ego Network and typing the character's name (MACE WIDU), the edges can be selected by degree. First the edges with MAX degree are colored then the edges of Degree 2 and then the edges of Degree 1. This happens because if it was the other way around, the edges with Degree 1 would be colored with the same color as the other two since the colors would overlap.

The layout that was found more aesthetically pleasing and easier to read was the Fruchterman Reingold. It can be seen that no nodes are overlapping, the colors are highly contrasted and the size of the nodes depicts the differences in weights.

The names of the nodes were tuned down a bit to fit inside the big nodes and be more readable.

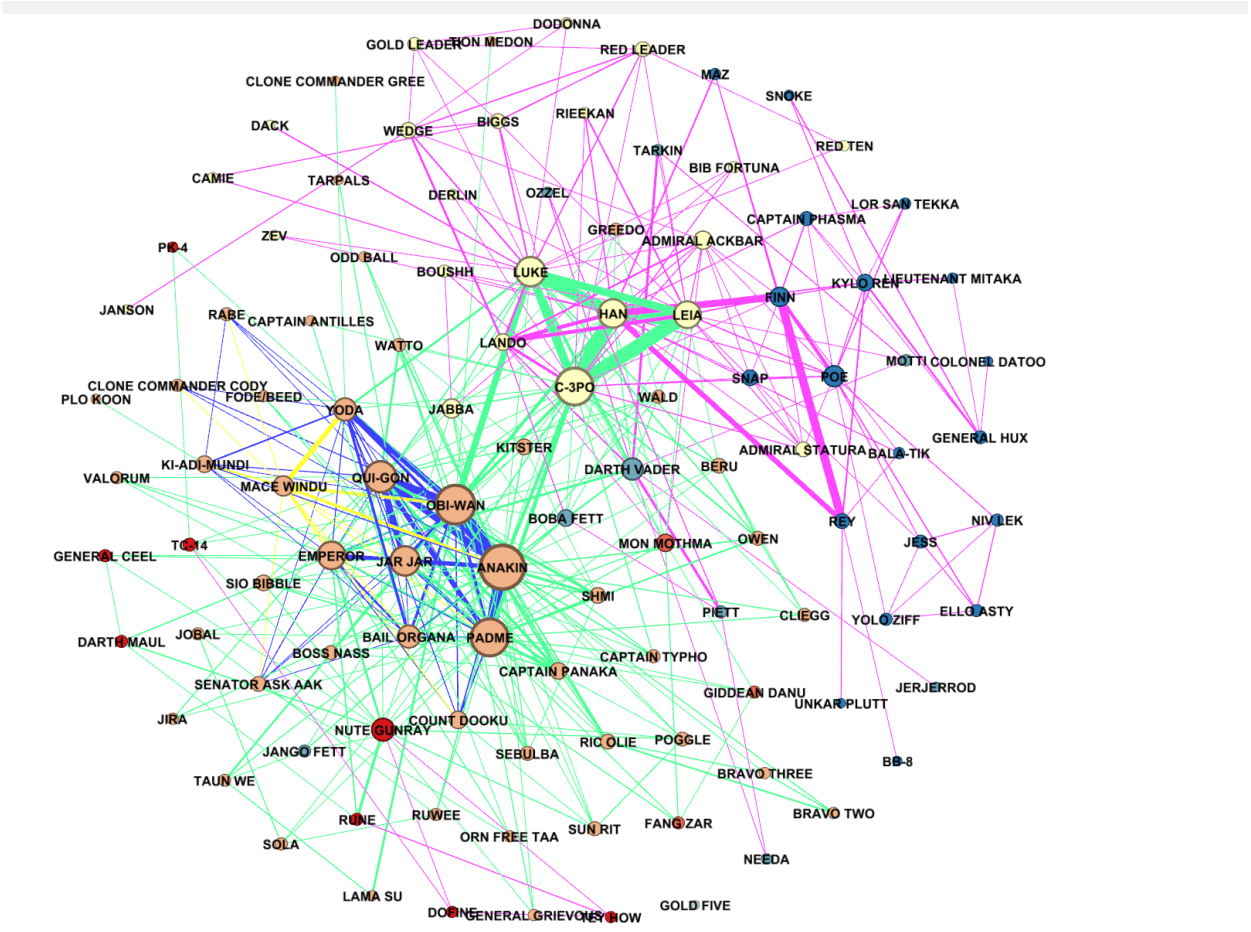

Figure 1: The Graph made after using Fruchterman Reingold Layout.

The favorite character's name is MACE WIDU with a degree of 13 weighted degree of 53.0 and PageRank of 0.0135566779.

MACE WINDU - Properties	
Size	22.682926
Position (x)	-355.016
Position (y)	305.84033
Position (z)	0.0
Color	[215,25,28]
Label Size	1.0
Label Color	null
Label Visible	☑
MACE WINDU - Attributes	
Id	29
Label	MACE WINDU
Interval	<null value>
colour	#808080
Degree	13
Eccentricity	5.0
Closeness Centrality	0.4153846153846154
Harmonic Closeness Centrality	0.48256172839506245
Betweenness Centrality	15.551101980907474
PageRank	0.013556677937055218
Modularity Class	0
Inferred Class	0
Weighted Degree	53.0

Figure 2: Mace Widu's Properties and Attributes.