

Graph Theory

Fall Season - First Assignment Regular Show (Sequence) - Social Network Analysis

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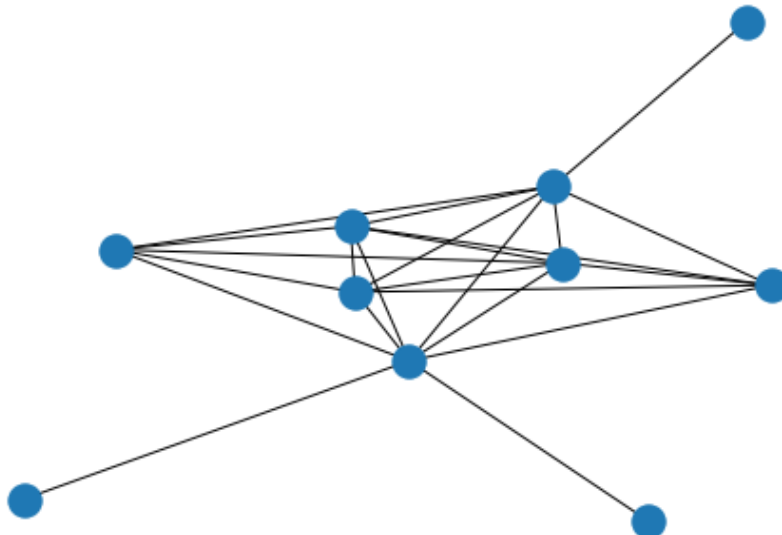
I. Social Group

We evaluate Social Network between important characters from Regular Show(Sequence). It was an animation show broadcast by Cartoon Network (Broadcast - Television) between 2009-2017. We are going to find most central character of the show during the analysis.

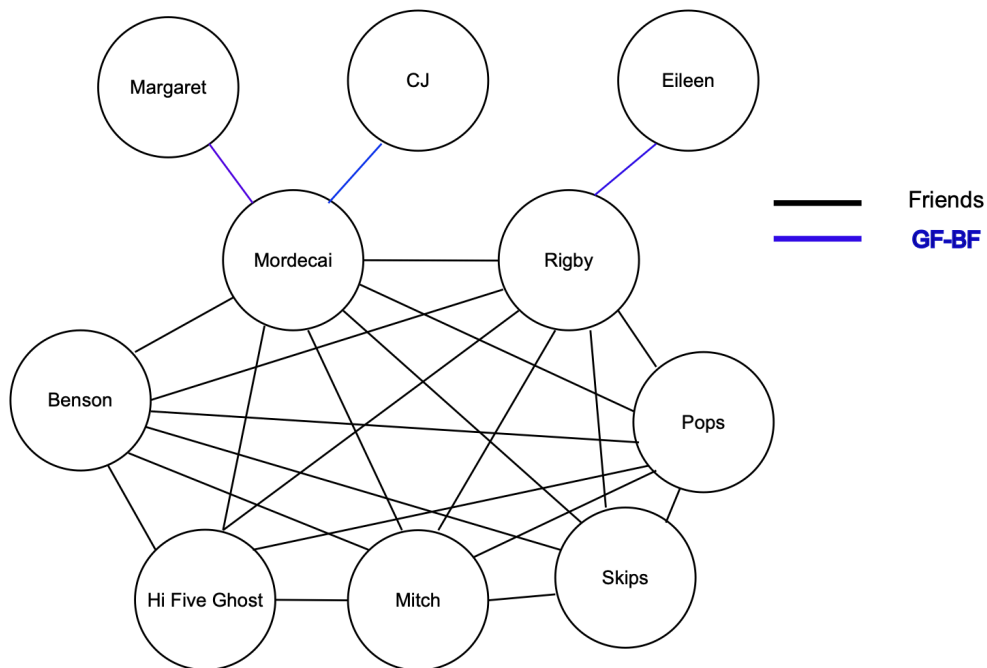
- Mordecai (lead role)
- Rigby (lead role)
- Mitch
- Skips
- Hi Five Ghost
- Benson
- Pops
- Margaret
- CJ
- Eileen

II. Graphs

- Python Nx library's graph result (with Jupyter)



- Manually drawing graph result (with Graphic - MacOS third part design tool)



III. Centrality Results

There are many Centrality measures some of them are; Degree Centrality Closeness Centrality Eccentricity Centrality Betweenness Centrality Eigenvector Centrality Katz Centrality Pagerank Centrality

I. Degree Centrality

Mordecai : 0.8888888888888888
 Rigby : 0.7777777777777777
 Mitch : 0.6666666666666666
 Skips : 0.6666666666666666
 HFGhost : 0.5555555555555556
 Benson : 0.5555555555555556
 Pops : 0.6666666666666666
 Margaret : 0.1111111111111111
 CJ : 0.1111111111111111
 Eileen : 0.1111111111111111

II. Closeness Centrality

Mordecai : 0.9
Rigby : 0.81818181818182
Mitch : 0.75
Skips : 0.75
HFGhost : 0.6923076923076923
Benson : 0.6923076923076923
Pops : 0.75
Margaret : 0.5
CJ : 0.5
Eileen : 0.47368421052631576

III. Eccentricity Centrality

Mordecai : 2
Rigby : 2
Mitch : 2
Skips : 2
HFGhost : 2
Benson : 2
Pops : 2
Margaret : 3
CJ : 3
Eileen : 3

IV. Betweenness Centrality

Mordecai : 0.42222222222222217
Rigby : 0.22777777777777775
Mitch : 0.00555555555555556
Skips : 0.00555555555555556
HFGhost : 0.0
Benson : 0.0
Pops : 0.00555555555555556
Margaret : 0.0
CJ : 0.0
Eileen : 0.0

V. Eigenvector Centrality

Mordecai : 0.40443619294979816
Rigby : 0.3939940297436182
Mitch : 0.3840779075605735
Skips : 0.3840779075605735
HFGhost : 0.33498301604006786
Benson : 0.33498301604006786
Pops : 0.3840779075605735
Margaret : 0.06945317852699444
CJ : 0.06945317852699444
Eileen : 0.06765961162116857

VI. Katz Centrality

Mordecai : 0.3926126345553114
Rigby : 0.37573958071680413
Mitch : 0.3591733095253326
Skips : 0.3591733095253326
HFGhost : 0.32924220803402066
Benson : 0.32924220803402066
Pops : 0.35917330952533266
Margaret : 0.1839163066626689
CJ : 0.1839163066626689
Eileen : 0.18222900161348582

VII. Pagerank Centrality

Mordecai : 0.1776617211078479
Rigby : 0.14898537521073774
Mitch : 0.12170714626952389
Skips : 0.12170714626952389
HFGhost : 0.1036933628940764
Benson : 0.1036933628940764
Pops : 0.1217071462695239
Margaret : 0.03387684741816743
CJ : 0.03387684741816743
Eileen : 0.03309104424835486

IV. Results

Character / Centrality M.	Degree	Closeness	Eccentricity	Betweenness	Eigenvector	Katz	Pagerank
Mordecai	0.88	0.90	2	0.42	0.40	0.39	0.17
Rigby	0.77	0.81	2	0.22	0.39	0.37	0.14
Mitch	0.66	0.75	2	0,005	0.38	0.35	0.12
Skips	0.66	0.75	2	0,005	0.38	0.35	0.12
HFGhost	0.55	0.69	2	0.0	0.33	0.32	0.10
Benson	0.55	0.69	2	0.0	0.33	0.32	0.10
Pops	0.66	0.75	2	0,005	0.38	0.35	0.12
Margaret	0.11	0.75	3	0.0	0.06	0.18	0.03
CJ	0.11	0.5	3	0.0	0.06	0.18	0.03
Eileen	0.11	0.47	3	0.0	0.06	0.18	0.03

We can find the Most Central character of the show is Mordecai. After the evaluation of the result, we can say centrality result shows us Mordecai is the well known character by the audience.