Community_Detection

April 24, 2018

In [1]:
```
import networkx as nx
import collections
import matplotlib.pyplot as plt
import pandas as pd
import numpy as np
import csv
from plotly.offline import download_plotlyjs, init_notebook_mode,  iplot, plot
import community
from operator import itemgetter
init_notebook_mode(connected=True)
```

helpful link: http://programminghistorian.github.io/ph-submissions/lessons/published/exploring-and-analyzing-network-data-with-python

In [2]:
```
with open('/Users/danaiavg/Desktop/marvel-comic-social-network/data/weighted_edge_top_
    nodereader = csv.reader(nodecsv) # Read the csv
    # Retrieve the data (using Python list comprhension and list slicing to remove the
    nodes = [n for n in nodereader]
```

In [3]:
```
nodes = nodes[1:]
```

In [4]:
```
for row in nodes:
    del row[0]
```

In [5]:
```
node1 = [n[0] for n in nodes]
node2 = [n[1] for n in nodes]
node1.extend(node2)
my_nodes = list(set(node1))
my_nodes.sort()
```

In [6]:
```
G=nx.Graph()
```

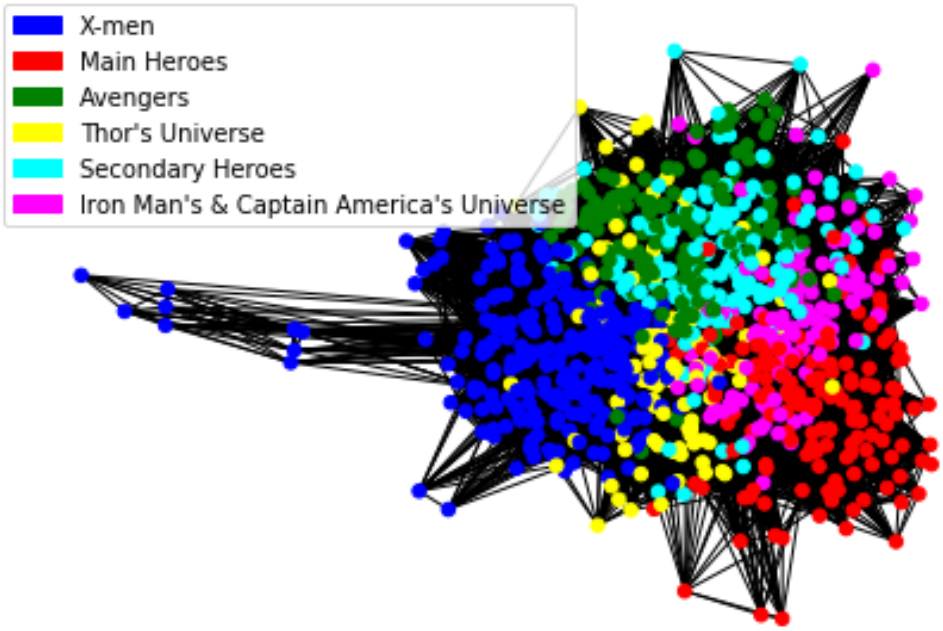
In [7]:
```
my_edges=nodes
for row in my_edges:
    del row[2]
```

In [8]:
```
G.add_nodes_from(my_nodes)
G.add_edges_from(my_edges)
```

```
In [9]: print(nx.is_connected(G))
```

```
True
```

```
In [10]: from community import community_louvain
         communities = community_louvain.best_partition(G)

In [11]: nx.set_node_attributes(G, 'modularity', communities)

In [12]: values = [communities.get(node) for node in G.nodes()]

         values1 = []
         for i in values:
             if i == 0:
                 values1.append('blue')
             elif i ==1:
                 values1.append('red')
             elif i ==2:
                 values1.append('green')
             elif i ==3:
                 values1.append('yellow')
             elif i ==4:
                 values1.append('cyan')
             elif i ==5:
                 values1.append('magenta')

In [16]: import matplotlib.patches as mpatches

         nx.draw_spring(G, node_color = values1, node_size=30, with_labels=False)
         plt.legend(handles=[mpatches.Patch(color='blue', label='X-men'),
                             mpatches.Patch(color='red', label='Main Heroes'),
                             mpatches.Patch(color='green', label='Avengers'),
                             mpatches.Patch(color='yellow', label="Thor's Universe"),
                             mpatches.Patch(color='cyan', label='Secondary Heroes'),
                             mpatches.Patch(color='magenta', label="Iron Man's & Captain Ameri
                            ])

         plt.savefig("/Users/danaiavg/Downloads/shit.png", format="PNG")
```




```
In [14]: # Iron Man/ Captain America Universe
         print(communities['IRON MAN/TONY STARK'])
         print(communities['CAPTAIN AMERICA'])
         print(communities['PATRIOT/JEFF MACE'])
```

```
5
5
5
```

```
In [15]: # Avenger
         print(communities['SCARLET WITCH/WANDA'])
         print(communities['BLACK WIDOW/NATASHA'])
         print(communities['HULK/DR. ROBERT BRUC'])
         print(communities['SHE-HULK/JENNIFER WA'])
         print(communities['ANT-MAN/DR. HENRY J.'])
         print(communities['VISION'])
         print(communities['THING/BENJAMIN J. GR'])
         print(communities['INVISIBLE WOMAN/SUE'])
```

```
2
2
2
```

```
2
2
2
2
2
```

In [17]:
```
# Xmen
print(communities['WOLVERINE/LOGAN'])
print(communities['STORM/ORORO MUNROE S'])
print(communities['CYCLOPS/SCOTT SUMMER'])
print(communities['PROFESSOR X/CHARLES'])
print(communities['DEADPOOL/JACK/WADE W'])
print(communities['ROGUE /'])
print(communities['BEAST/HENRY &HANK& P'])
```

```
0
0
0
0
0
0
0
```

In [18]:
```
# Main Heroes
print(communities['DAREDEVIL/MATT MURDO'])
print(communities['SPIDER-MAN/PETER PAR'])
print(communities['MR. FANTASTIC/REED R'])
print(communities['HUMAN TORCH/JOHNNY S'])
```

```
1
1
1
1
```

In [ ]:
```
# [k for k,v in communities.items() if v ==5]
```