

## Implementation and Methodology

A code was developed in Python. The .tsv files were read and put inside matrices, graphs and connected components were computed using networkx, metrics were computed using pandas and networkx and graphics were plotted using matplotlib.

For Gephi visualizations, .gexf files were generated using networkx and exported and formatted on Gephi.

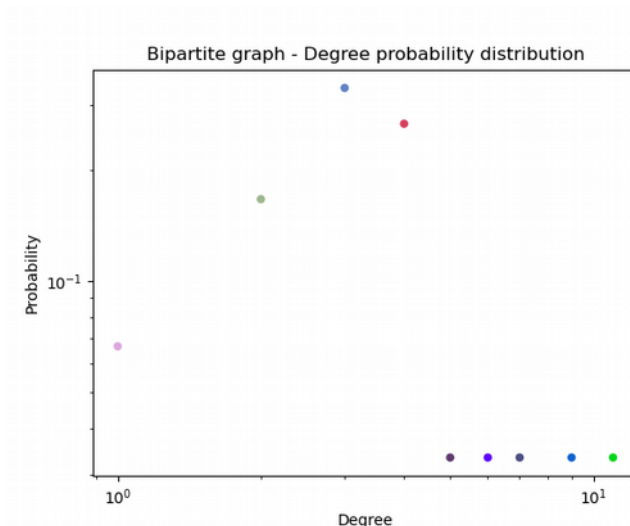
## Bipartite Network

### Visualization

The graph could be view with Gephi by opening bipartite\_graph.gephi file.

### Degree Distribution

Degree	Probability
1	0.066667
2	0.166667
3	0.333333
4	0.266667
5	0.033333
6	0.033333
7	0.033333
9	0.033333
11	0.033333



The graph does not fit a power law, or known degree distribution. The graph is too small to follow them.

### Connected Components

There is only one connected component in the bipartite class network ([{'P9', 'P1', 'P15', 'H11', 'H2', 'P2', 'P4', 'P13', 'H8', 'H9', 'P3', 'H3', 'P5', 'H7', 'P7', 'P17', 'P18', 'P11', 'P14', 'P8', 'P12', 'P10', 'H6', 'H12', 'H10', 'P6', 'P16', 'H1', 'H5', 'H4'}])), meaning that this graph is a connected graph.

### Clustering Coefficients

Node	Value
H1	0
H2	0
H3	0
H4	0
H5	0

<b>H6</b>	<b>0</b>
<b>H7</b>	<b>0</b>
<b>H8</b>	<b>0</b>
<b>H9</b>	<b>0</b>
<b>H10</b>	<b>0</b>
<b>H11</b>	<b>0</b>
<b>H12</b>	<b>0</b>
<b>P1</b>	<b>0</b>
<b>P2</b>	<b>0</b>
<b>P3</b>	<b>0</b>
<b>P4</b>	<b>0</b>
<b>P5</b>	<b>0</b>
<b>P6</b>	<b>0</b>
<b>P7</b>	<b>0</b>
<b>P8</b>	<b>0</b>
<b>P9</b>	<b>0</b>
<b>P10</b>	<b>0</b>
<b>P11</b>	<b>0</b>
<b>P12</b>	<b>0</b>
<b>P13</b>	<b>0</b>
<b>P14</b>	<b>0</b>
<b>P15</b>	<b>0</b>
<b>P16</b>	<b>0</b>
<b>P17</b>	<b>0</b>
<b>P18</b>	<b>0</b>

**Average Cluster Coefficient: 0**

#### **Other Metrics**

**Average Degree: 3.7333333333333334**

**Degree Standard Deviation: 2.14850923992032**

**Average Distance: 2.6160919540229886**

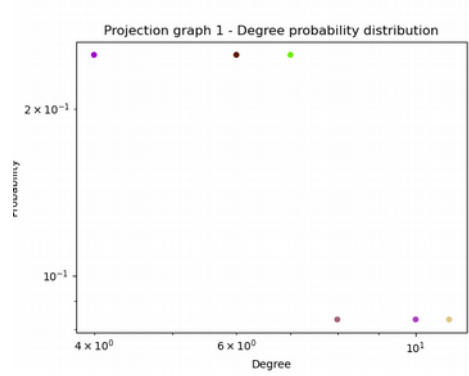
### **Projection 1 (Hobbies)**

#### **Visualization**

The graph could be view with Gephi by opening projection\_graph\_1.gephi file.

#### **Degree Distribution**

Degree	Probability
4	0.25
6	0.25
7	0.25
8	0.083333
10	0.083333
11	0.083333



The graph does not fit a power law, or known degree distribution. The graph is too small to follow them.

### Connected Components

There is only one connected component in the hobbies projected class network ([{'H6', 'H12', 'H10', 'H4', 'H8', 'H11', 'H9', 'H3', 'H1', 'H5', 'H7', 'H2'}]), meaning that this graph is a connected graph.

### Clustering Coefficients

Node	Value
H1	0.733333333333
H2	0.71428571428
H3	1
H4	1
H5	0.76190476190
H6	0.8
H7	0.52727272727
H8	0.57777777777
H9	1
H10	0.71428571428
H11	0.73333333333
H12	0.64285714285

**Average Cluster Coefficient: 0.767087542087542**

### Other Metrics

**Average Degree: 6.666666666666667**  
**Degree Standard Deviation: 2.229281716090851**  
**Average Distance: 1.393939393939394**

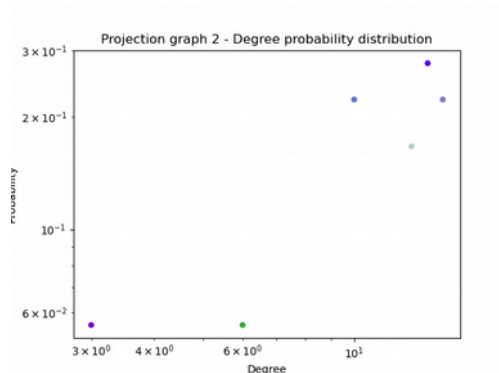
### Projection 2 (Persons)

## Visualization

The graph could be view with Gephi by opening projection\_graph\_2.gephi file.

## Degree Distribution

Degree	Probability
3	0.055556
6	0.055556
10	0.222222
13	0.166667
14	0.277778
15	0.222222



The graph does not fit a power law, or known degree distribution. The graph is too small to follow them.

## Connected Components

There is only one connected component in the hobbies projected class network ([{'P4', 'P13', 'P17', 'P9', 'P18', 'P1', 'P10', 'P15', 'P6', 'P3', 'P5', 'P16', 'P14', 'P11', 'P2', 'P8', 'P12', 'P7'}])), meaning that this graph is a connected graph.

## Clustering Coefficients

Node	Value
P1	0.733333333333
P2	0.89743589743
P3	1
P4	0.77142857142
P5	0.85714285714 28571
P6	1
P7	0.644444444444
P8	0.69230769230
P9	0.80952380952
P10	0.73626373626
P11	0.888888888888
P12	0.78095238095
P13	0.85714285714
P14	0.76923076923
P15	0.80952380952

<b>P16</b>	<b>0.89743589743</b>
<b>P17</b>	<b>0.866666666666</b>
<b>P18</b>	<b>0.84615384615</b>

**Average Cluster Coefficient: 0.8254375254375257**

#### **Other Metrics**

**Average Degree: 12.1111111111111**

**Degree Standard Deviation: 3.3587268051501282**

**Average Distance: 1.2875816993464053**