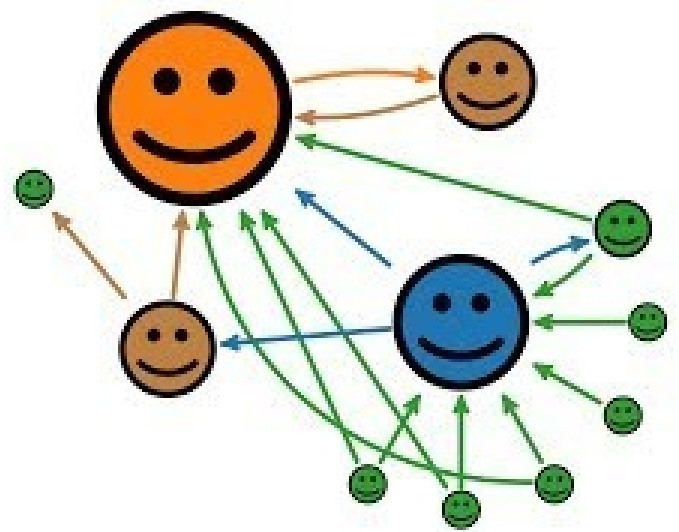
























# Recommendation Systems based on Page Rank Algorithm

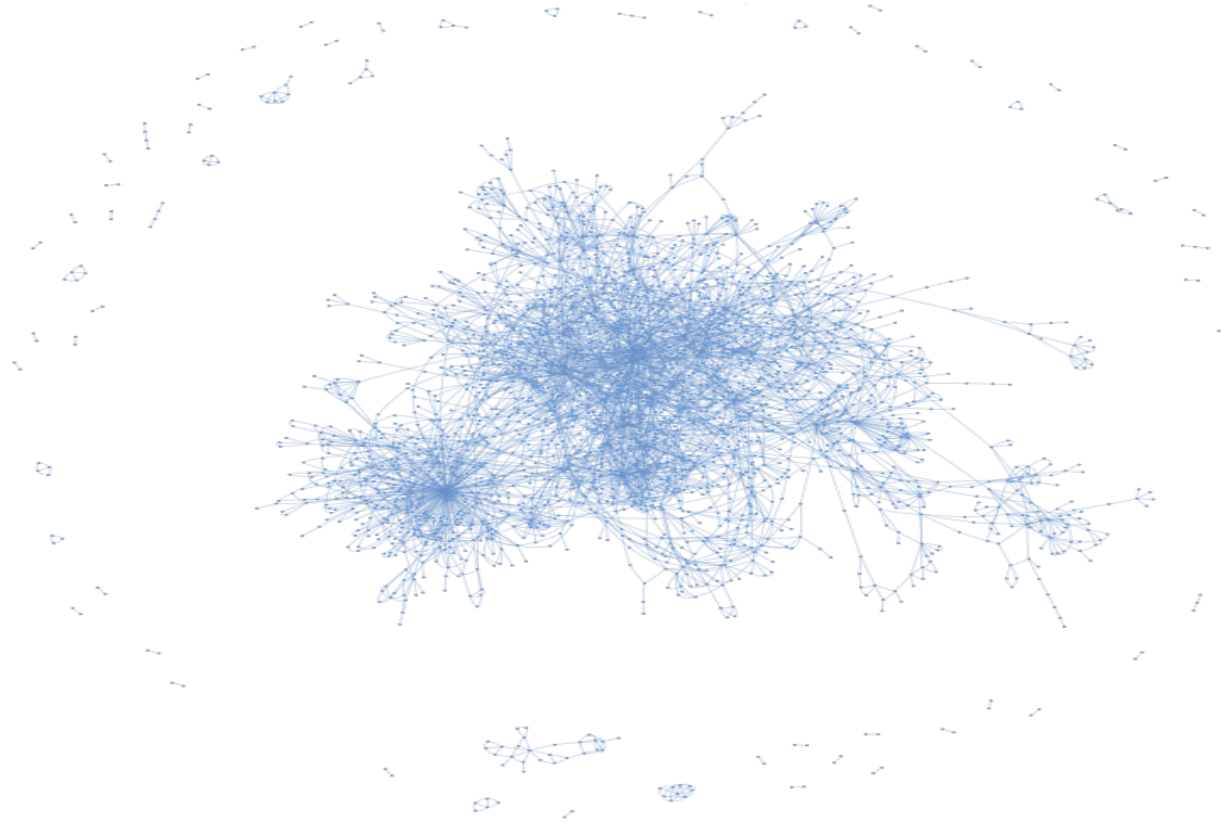
- Building a Graph
- Get (personalised) score
- Make recommendations



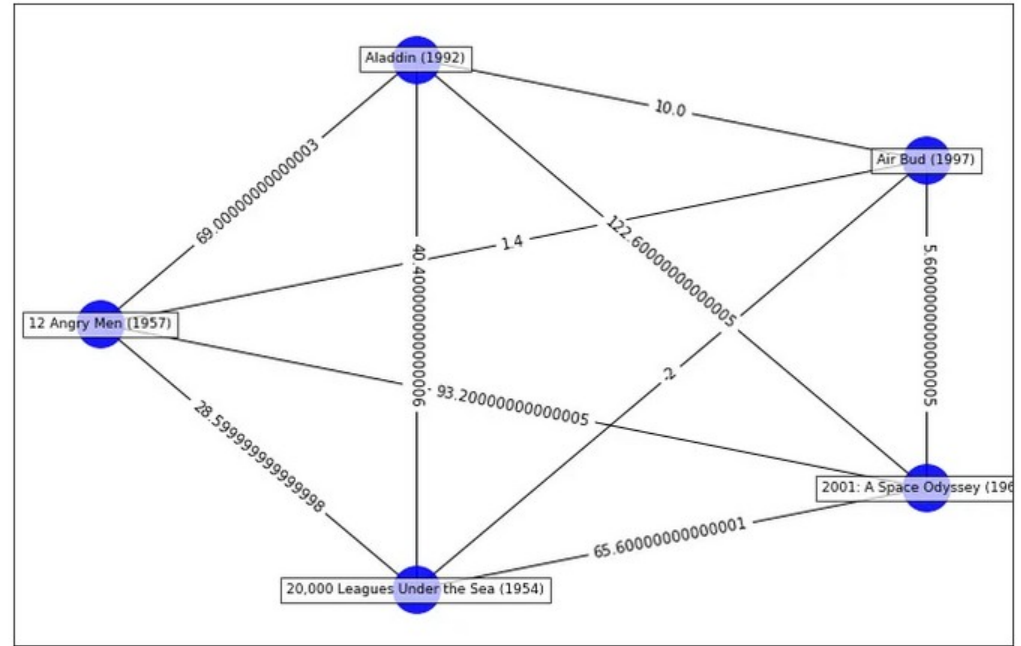
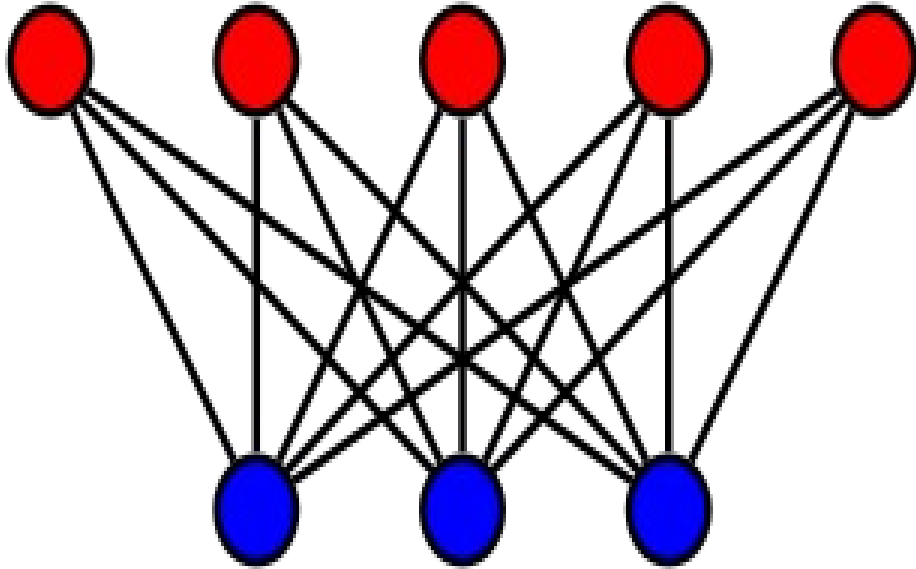
# Graph Datasets

 <b>NetSet</b> Network datasets  		
In Python, you can load each dataset through the <code>load_netset</code> function of <code>scikit-network</code> .		
 <b>WikiVitals</b> ⓘ Vital articles of Wikipedia in English (level 4) with links between them and words used in summaries.	 <b>WikiVitals+</b> ⓘ Vital articles of Wikipedia in English (level 5) with links between them and words used in summaries.	 <b>WikiVitals (fr)</b> Vital articles of Wikipedia in French (level 4) with links between them and words used in summaries.
 <b>WikiSchools</b> ⓘ Articles of Wikipedia for schools with links between them and words used in summaries.	 <b>WikiHumans</b> ⓘ Articles of Wikipedia on humans with links between them and links to other articles.	 <b>WikiLinks</b> Articles of Wikipedia (2013) with links between them and words used in summaries.
 <b>OpenFlights</b> ⓘ Airports with daily number of flights between them.	 <b>Cinema</b> ⓘ Graph between movies and actors.	 <b>20NewsGroups</b> Graph between messages (in 20 newsgroups) and words.
 <b>CiteSeer</b> ⓘ Graph of scientific publications.	 <b>Cora</b> ⓘ Graph of citations between scientific publications.	 <b>PolBlogs</b> Graph of political blogs and links between them.
 <b>French National Assembly</b> ⓘ Votes of deputies in France.	 <b>US House of Representatives</b> ⓘ Votes of the US House of Representatives.	 <b>US Senate</b> Votes of the US Senate.
 <b>Movielens</b> ⓘ Ratings of movies by users.	 <b>Math World</b> ⓘ Graph of mathematical concepts and mathematicians.	 <b>Small World of Words</b> Directed graph of words.
 <b>Chess openings</b> ⓘ Graph between chess players and chess openings.		

# Cora Scientific Citation Network



# Building the Graph



# • What is Page Rank Algorithm

- 1999 Google Page Rank  
Steady State of Random Surfer .
- Score of each node is determined by the number and node\_score of incoming links (power iteration till convergence)
- Also Eigenvector of Adjacency – Degree Matrix where eigenvalue is 0
- 
- Content-Free Ranking of Nodes (Webside) in a Web

- Representing a Graphs  $G(N,V)$

- 
- - Adjacency
  - Biadjacency
  - Monopartite Graph
  - Biparted Graph