Erdos Network Analysis

Quan Pham, Eirik Iversen, Xinhao Ma

Original Model

$$y = b_1 x_1 + b_2 x_2$$

$$y = Influence$$

$$b_1 = \frac{1}{median(JointAuthors)}$$

$$b_2 = \frac{1}{median(year)}$$

$$x_1 = JointAuthor$$

$$x_2 = 2018 - year$$

Secondary Model

$$y = b_1 x_1 + b_2 x_2 + b_3 x_3$$

$$y = Influence$$

$$b_1 = \frac{1}{median(JointAuthors)}$$

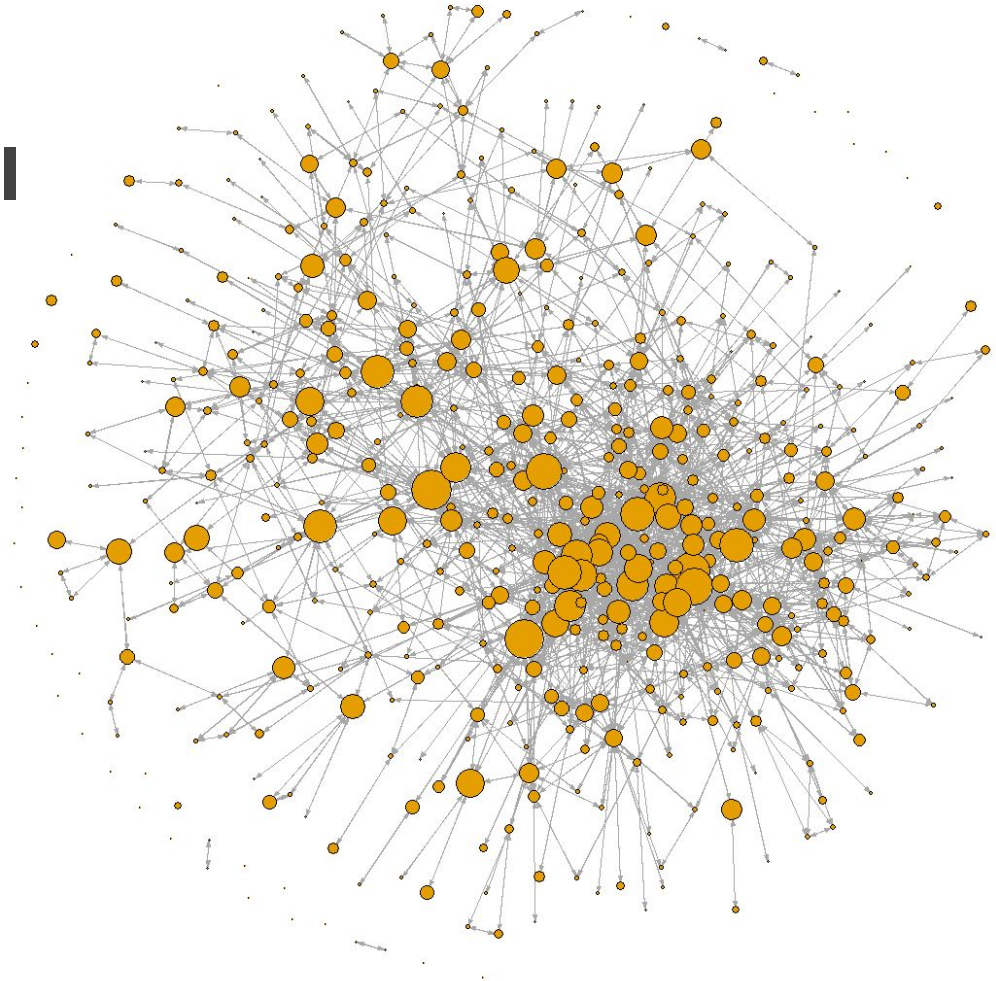
$$b_2 = \frac{1}{median(CoAuthors)}$$

$$b_3 = \frac{1}{median(year)}$$

$$x_1 = JointAuthor$$

$$x_2 = CoAuthors$$

$$x_3 = 2018 - year$$



Who is the most influential Coauthor?

Name	Year	Joint Author	Coauthor	Influence	Degree
Sarkozy, Andras	1966	62	26	67.226	50
Hajnal, Andras	1958	56	31	62.230	60
Faudree, Ralph Jasper, Jr.	1976	50	31	56.221	60
Schelp, Richard Herbert	1976	42	28	47.621	54
Sos, Vera Turan	1966	35	40	43.026	78

IMDB Database

Amongst the actors that Leonardo DiCaprio works with, who is the most influential?

$$y = b_1 x_1 + b_2 x_2$$

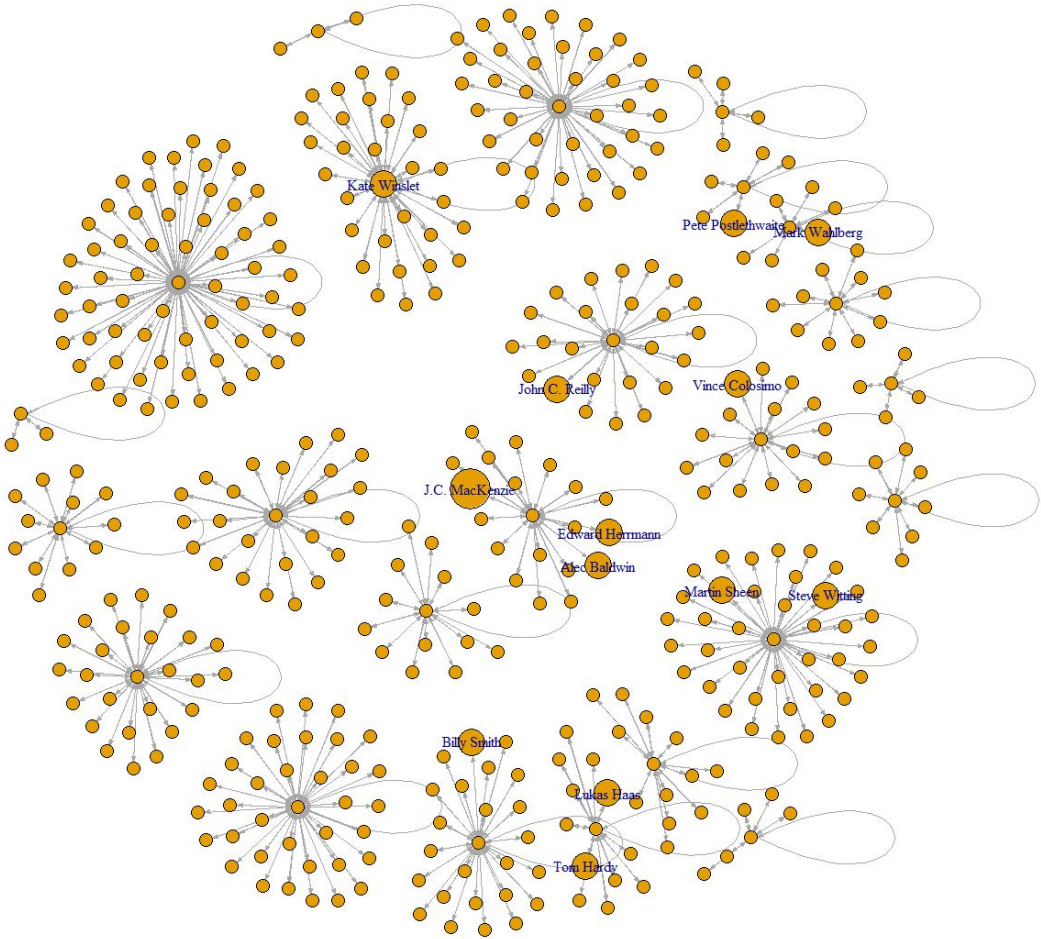
$$y = Influence$$

$$b_1 = \frac{1}{median(x_1)}$$

$$b_2 = \frac{1}{median(year)}$$

$$x_1 = \text{Number of movies with DiCaprio}$$

$$x_2 = 2018 - year$$



Future Works

- Consider more variable to incorporate in our model
  - Use Co-Authors outside of immediate graph
- Assumption for IMDB:
  - For the model, we assumed that the top 20 percent of the cast were co-stars (Joint- Authors) and the rest of the cast are supporting cast (Co- Authors)
  - The Erdos model we developed does not seem to extend well to the film industry. It would probably be better to make a new model or get more variables from IMDB
- Find more data similar to IMDB to see how it compares to other types of data.