

# PRIVACY ATTACKS IN SOCIAL MEDIA USING PHOTO TAGGING NETWORKS: A CASE STUDY WITH FACEBOOK

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# **COLLATERAL DAMAGE**

unintentionally putting privacy at risk when sharing information



Sir John Sawers

# MI6 chief blows his cover as wife's Facebook account reveals family holidays, showbiz friends and links to David Irving

By JASON LEWIS

UPDATED: 18:14 GMT, 5 July 2009

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The new head of MI6 has been left exposed by a major personal security breach after his wife published intimate photographs and family details on the Facebook website.

Sir John Sawers is due to take over as chief of the Secret Intelligence Service in November, putting him in charge of all Britain's spying operations abroad.

But his wife's entries on the social networking site have exposed potentially compromising details about where they live and work, who their friends are and where they spend their holidays.

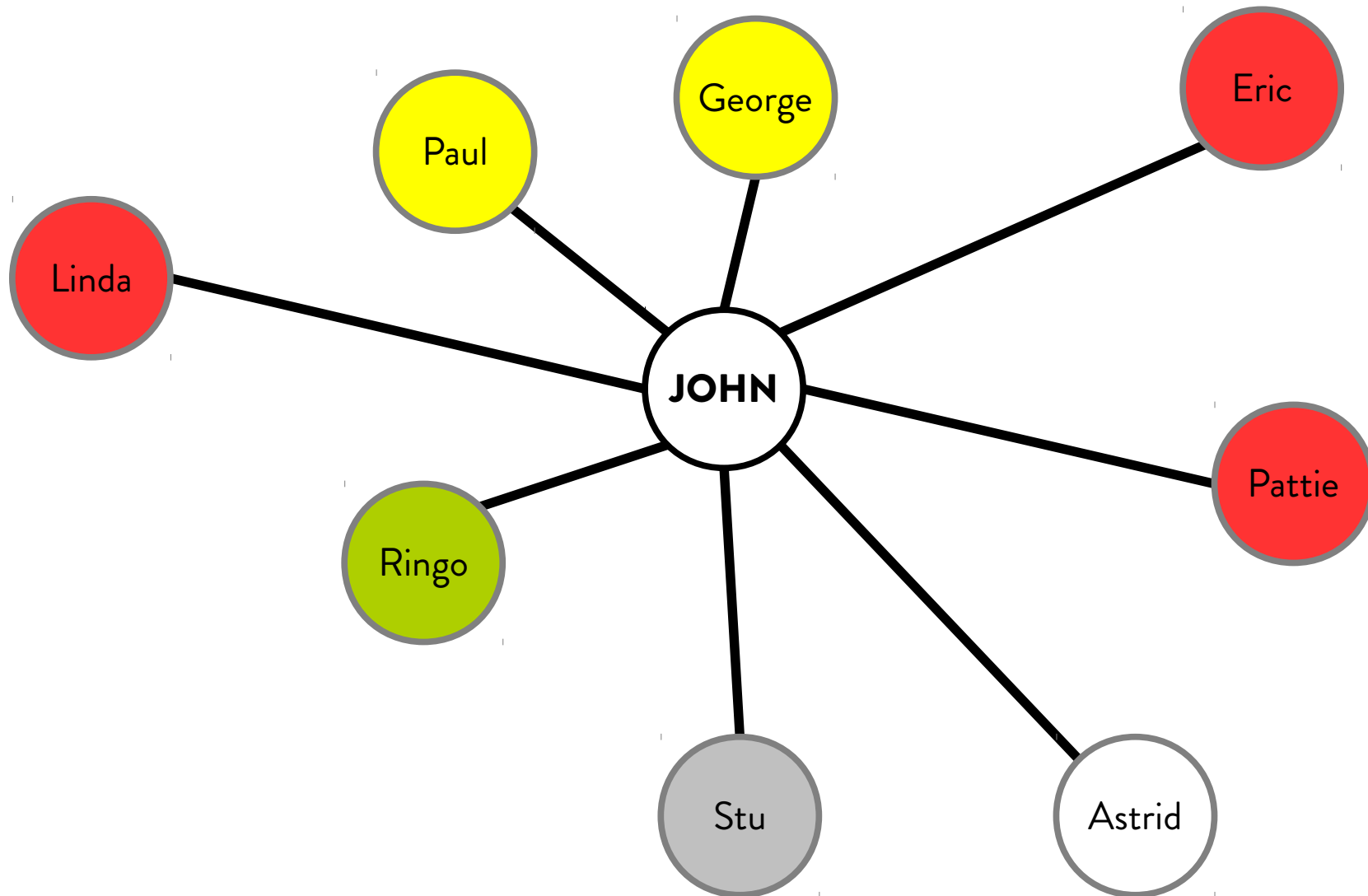


# PHOTO TAGGING

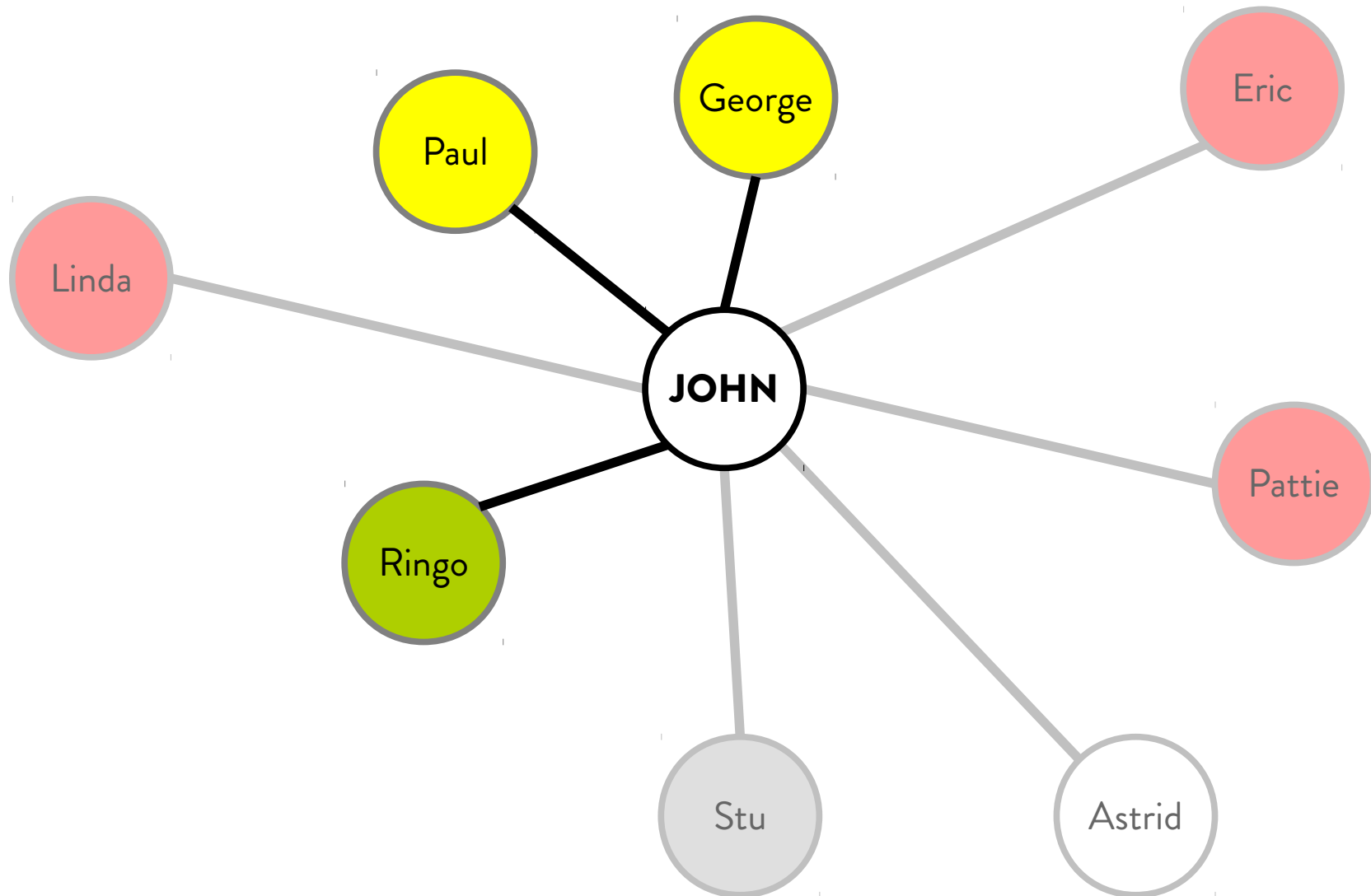


In this photo: [Julia Marie Brown](#) (photos - remove tag), [Caroline Espinoza](#) (photos), [Thomas Carlson](#) (photos)

# PREDICTION ALGORITHMS



# PREDICTION ALGORITHMS



**1. PHYSICAL CLOSENESS**

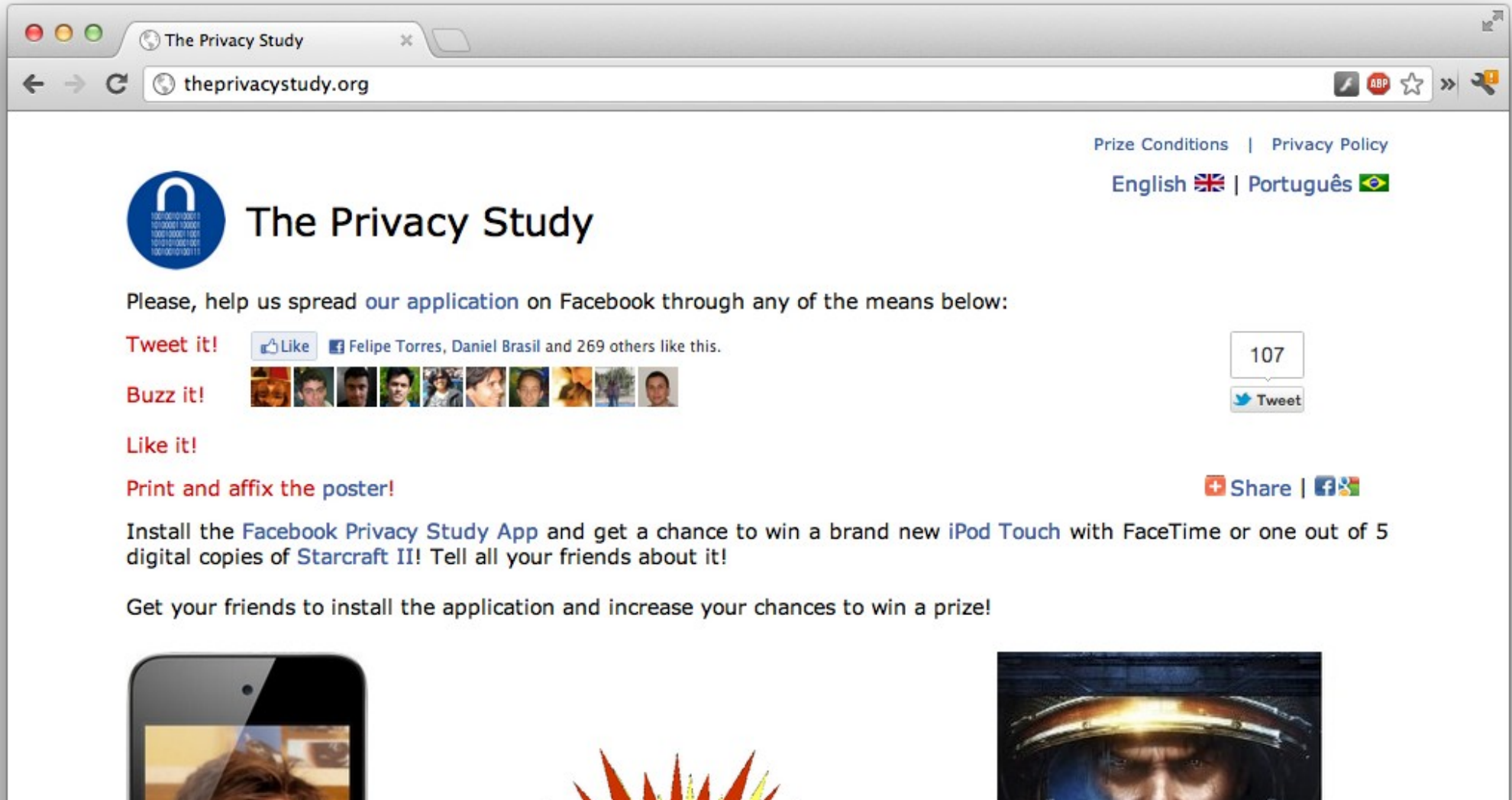
**2. MORE SOCIAL**

**3. INTERACTION**



# DATA COLLECTION



facebook app the **privacystudy.org**





The screenshot shows a web browser window with the address bar displaying 'theprivacystudy.org'. The page content includes a logo for 'The Privacy Study' (a blue circle with a white 'n' and binary code), navigation links for 'Prize Conditions' and 'Privacy Policy', and language options for 'English' and 'Português'. The main text asks users to help spread the application on Facebook. It features social media sharing options: 'Tweet it!' with a 'Like' button and a notification that Felipe Torres, Daniel Brasil, and 269 others liked it; 'Buzz it!' with a row of profile pictures; and 'Like it!'. There is also a 'Print and affix the poster!' link and a 'Share' button with social media icons. A '107' counter and a 'Tweet' button are visible on the right. At the bottom, there are images of an iPhone, a Starcraft II logo, and a close-up of a Starcraft II player's helmet.


The Privacy Study

Prize Conditions | Privacy Policy




English  | Português 

Please, help us spread our application on Facebook through any of the means below:

**Tweet it!**  Like  Felipe Torres, Daniel Brasil and 269 others like this.




**Buzz it!** 

**Like it!**

**Print and affix the poster!**  Share |  

Install the Facebook Privacy Study App and get a chance to win a brand new iPod Touch with FaceTime or one out of 5 digital copies of Starcraft II! Tell all your friends about it!

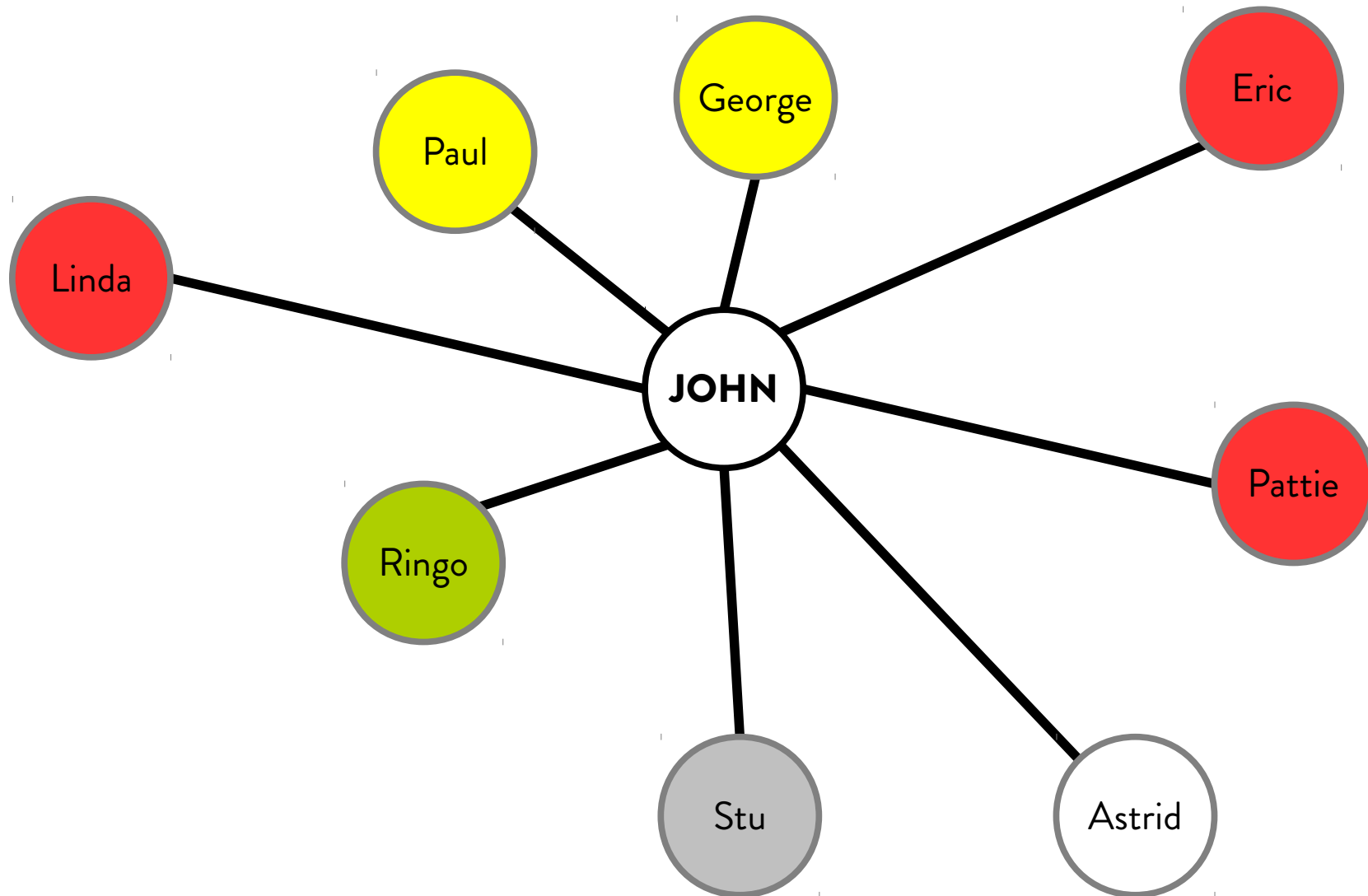
Get your friends to install the application and increase your chances to win a prize!





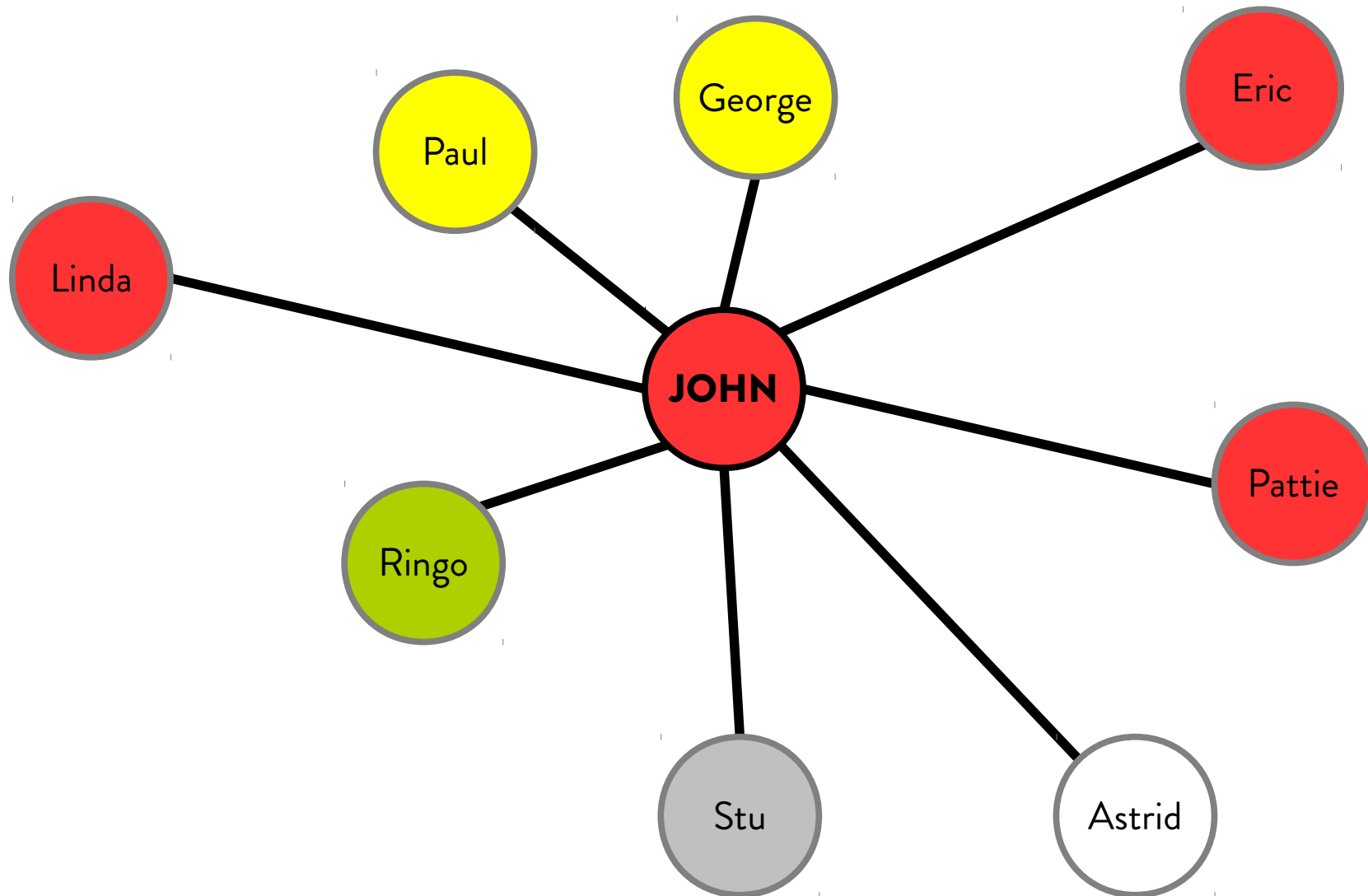
# FRIENDS EGO-NETWORK LOOKUP (FEL)

baseline algorithm

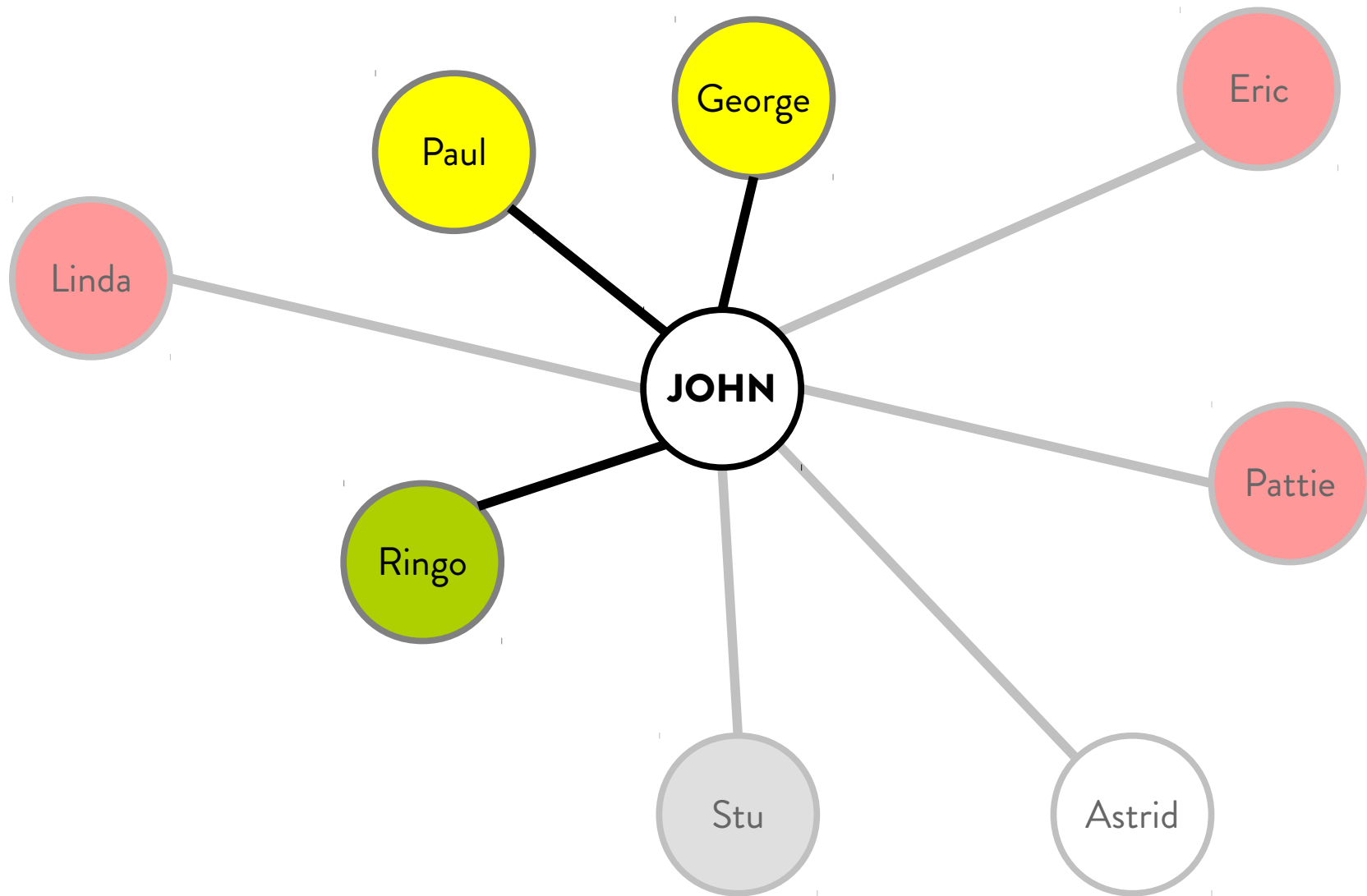


# FRIENDS EGO-NETWORK LOOKUP (FEL)

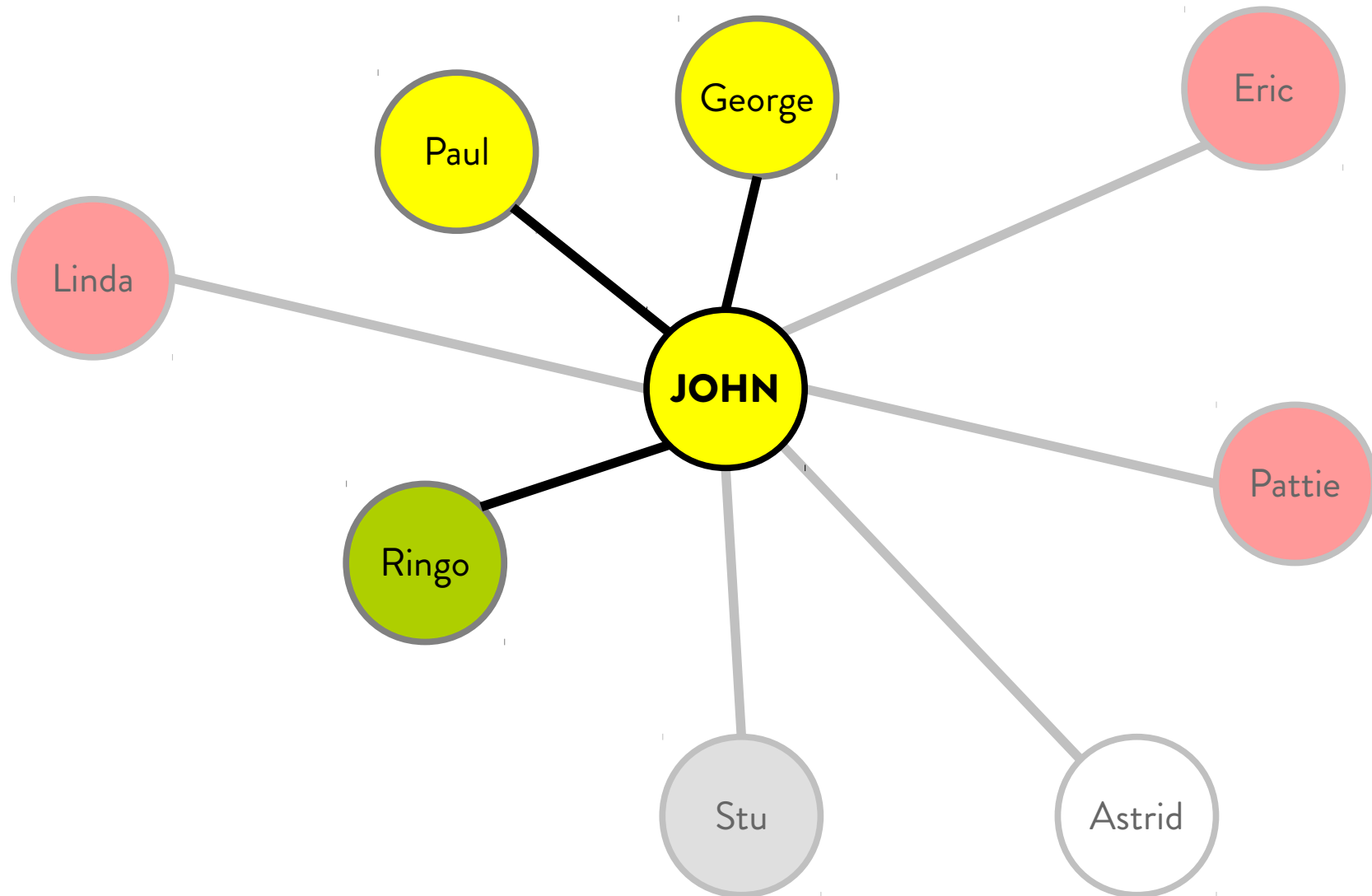
baseline algorithm



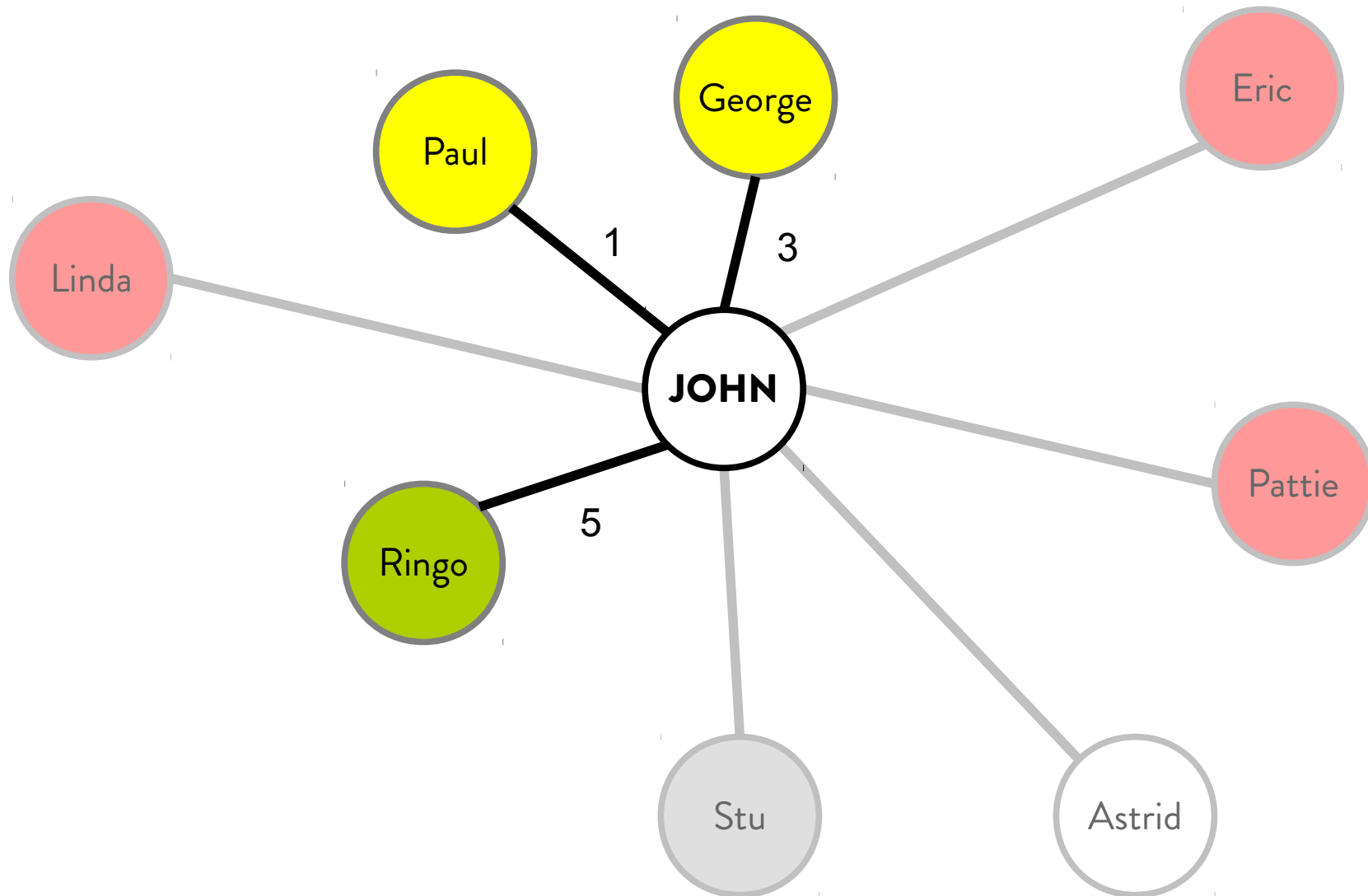
# TAGGED FRIENDS EGO-NETWORK LOOKUP (TFEL)



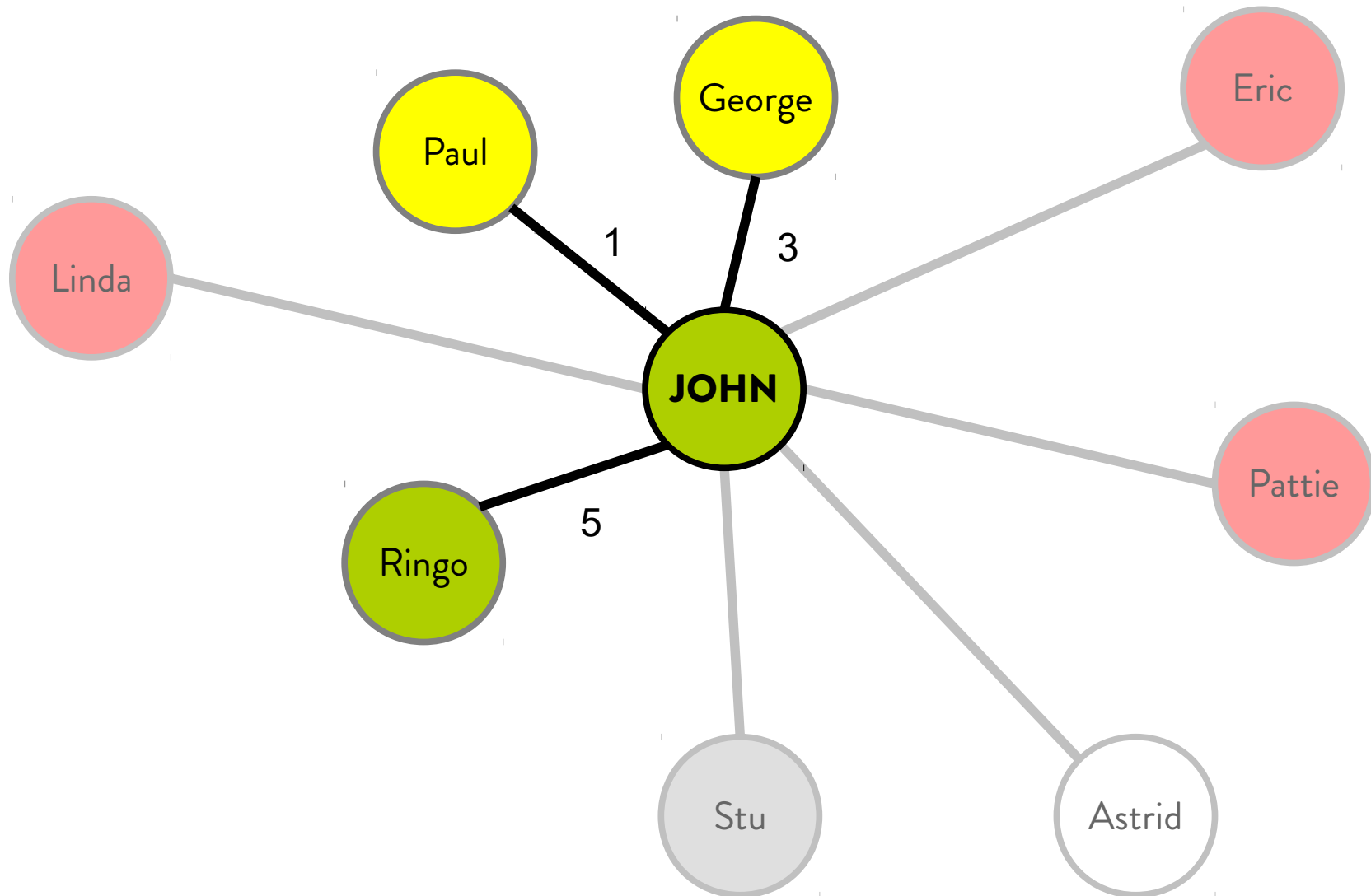
# TAGGED FRIENDS EGO-NETWORK LOOKUP (TFEL)



# WEIGHTED TAGGED FRIENDS EGO-NETWORK LOOKUP (WTFEL)



# WEIGHTED TAGGED FRIENDS EGO-NETWORK LOOKUP (WTFEL)





# RESULTS

current city, current country and gender

		<b>FEL</b>	<b>TFEL</b>	<b>WTFEL</b>
Current City	n=111	54.0%	<b>65.8%</b>	<b>77.5%</b>
Current Country	n=111	80.2%	<b>88.3%</b>	<b>93.7%</b>
Gender	n=238	73.9%	85.7%	<b>89.1%</b>

**bold values** are statistically significant when using chi-square

# RESULTS

age

	<b>FEL</b>	<b>TFEL</b>	<b>WTFEL</b>
<b>MAE (Years)</b>			
Mean	2.38 ± 0.44	2.28 ± 0.45	2.01 ± 0.44
Median	1.51 ± 0.45	2.01 ± 0.46	1.64 ± 0.44
Mode	1.50 ± 0.47	1.93 ± 0.43	1.58 ± 0.43
<b>CS(4) (%)</b>			
Mean	86.8	83.6	87.9
Median	92.6	85.2	88.9
Mode	92.6	84.7	88.9

chi-square and one-way ANOVA show no statistically significant difference

# WHY?

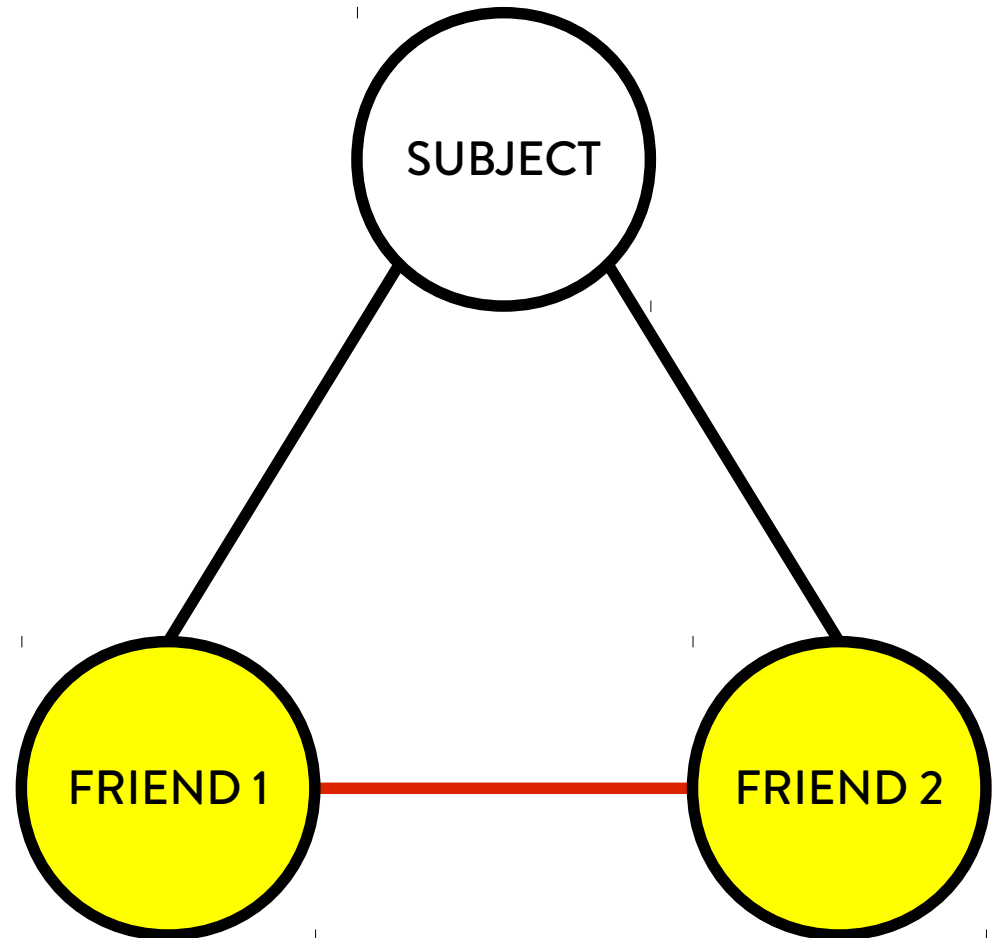
specific age' group



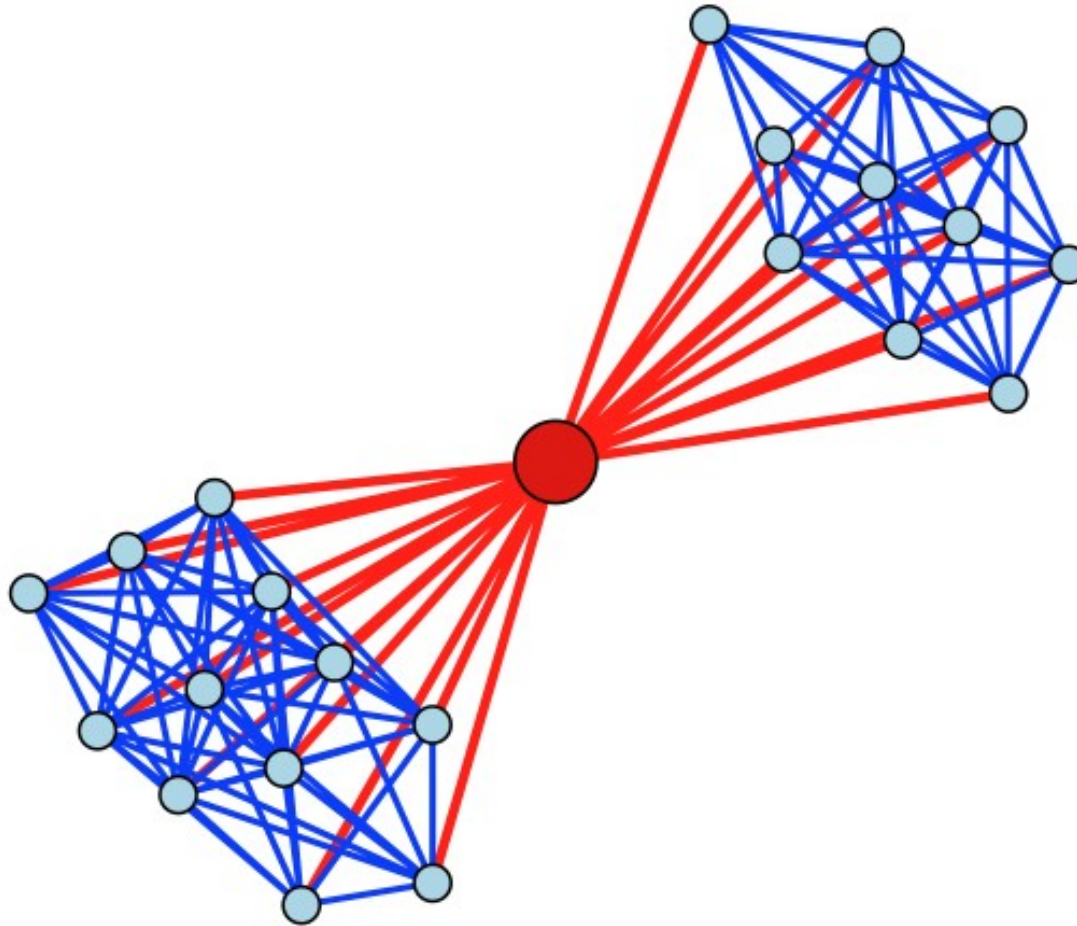
**~44%**  
**USERS AGED**  
**18-25**

# SIMMELIAN TIES

1. promote trust
2. reduce individuality
3. promote homophily



# CLUSTERING COEFFICIENT



**FRIENDS**

**0.10**

**TAGGED FRIENDS**

**0.52**

# PHOTO TAGS

1. enhance the accuracy of prediction algorithms
2. can act as a filter

**THANK YOU**

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