

Twitter Data Analysis

IMT2016057 - Lakshmi Manonmaie

IMT2016072 - Nomula Rohith

IMT2016078 - Kalva Vaishnavi

IMT2016108 - Arunaav

IMT2016110 - Dachepalli Soumith

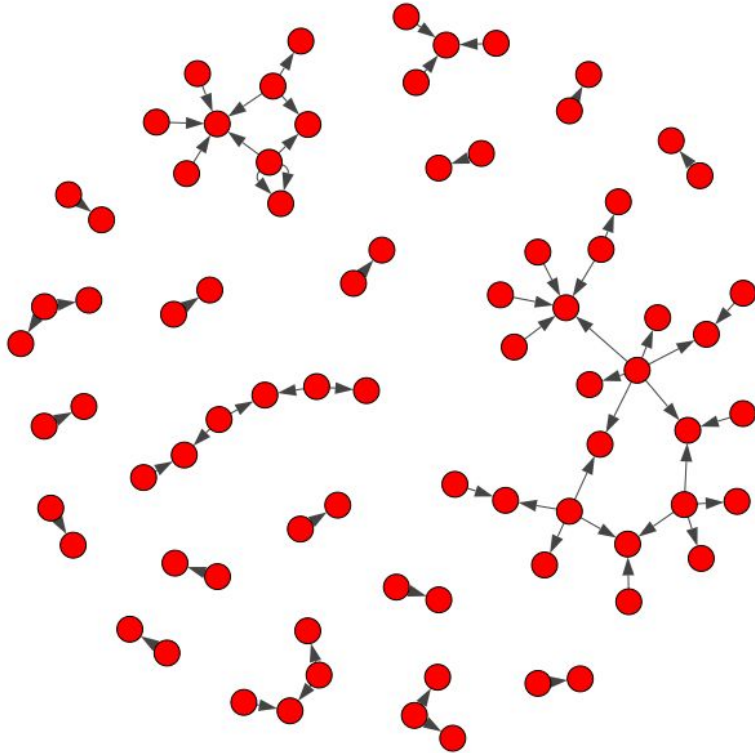


Network Analysis

#LawyersVsDelhiPolice

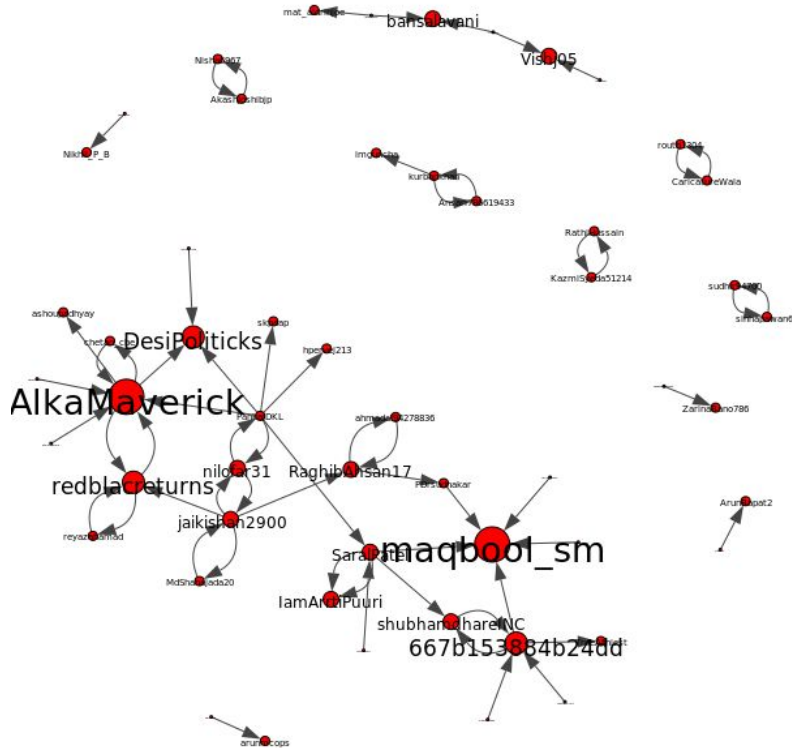


#LawyersVsDelhiPolice



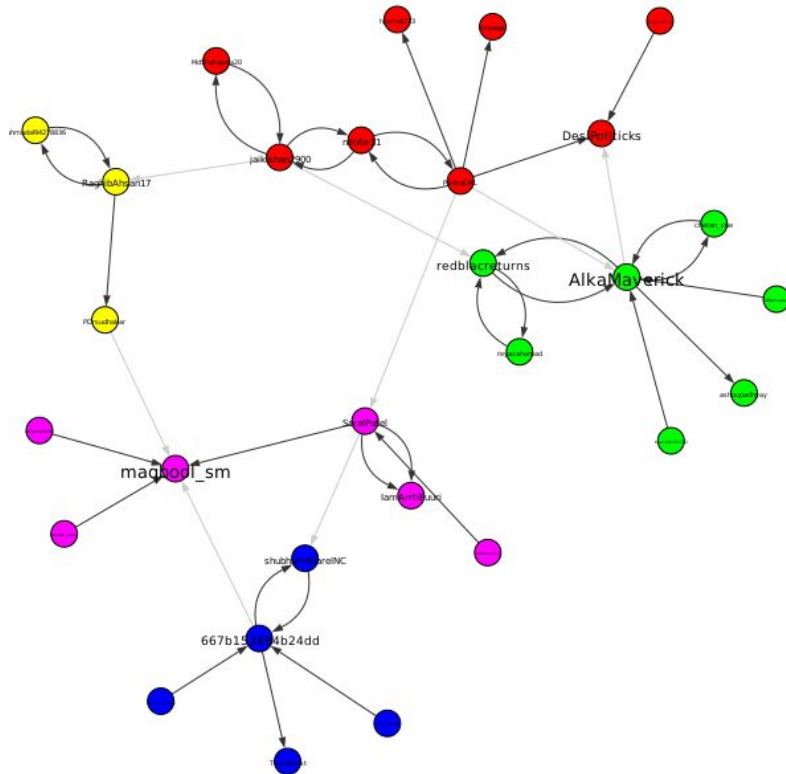
- 209 users
- 200 tweets over 6 minutes
- Thousands of police protested outside police headquarters on to demand action against those who involved in a attack on their colleague outside the Saket Court
- Clash over parking dispute

Follower Followee Network



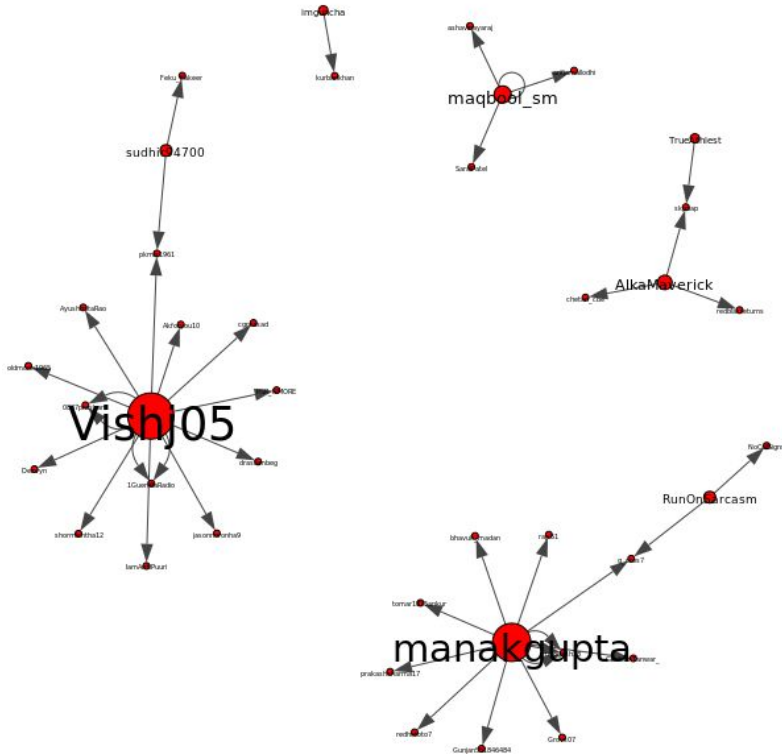
- Node - User
- Edge (i -> j) - i follows j
- Main Influencers - High Degree Centrality
 - AlkaMaverick
 - maqbool_sm

Communities



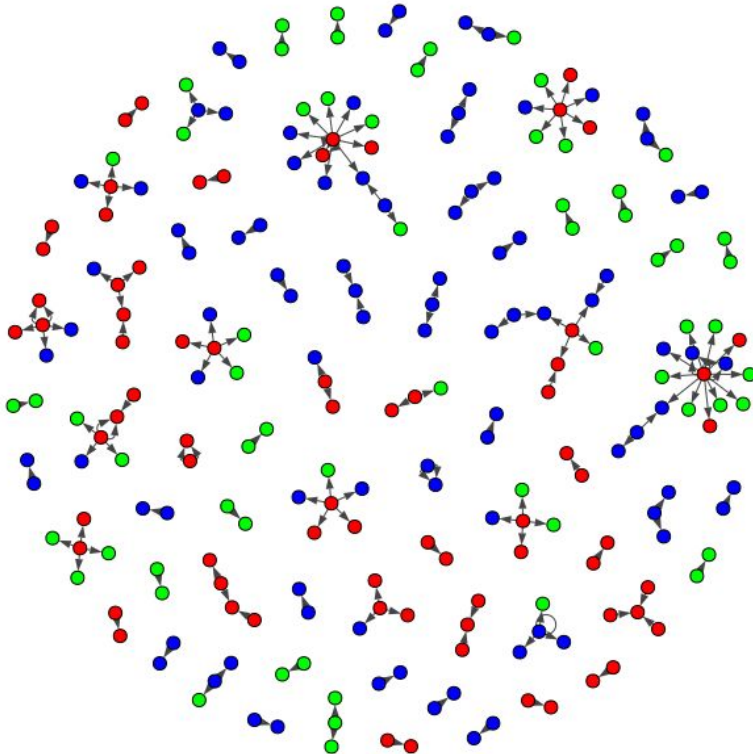
- Community detection based on random walks
- Two main influencers are part of different communities

Retweet Network



- Node - User
- Edge (i->j) - j retweets i
- Most retweeted users
 - Vishj05
 - Manakgupta
- Follower followee vs retweet network
- Reachability

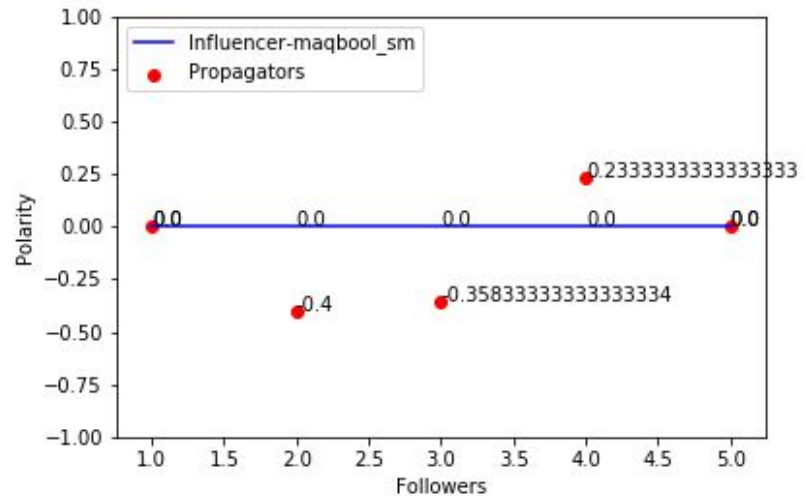
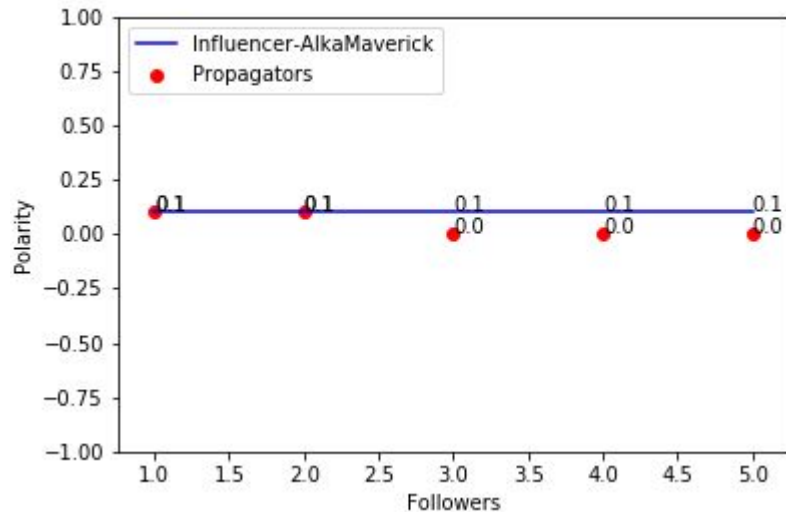
Analysis over time



- Retweet network
 - First 2 minutes - Red
 - Next 2 minutes - Blue
 - Last 2 minutes - Green
- Communities growing over time

Sentiments of Influencers Vs Propagators

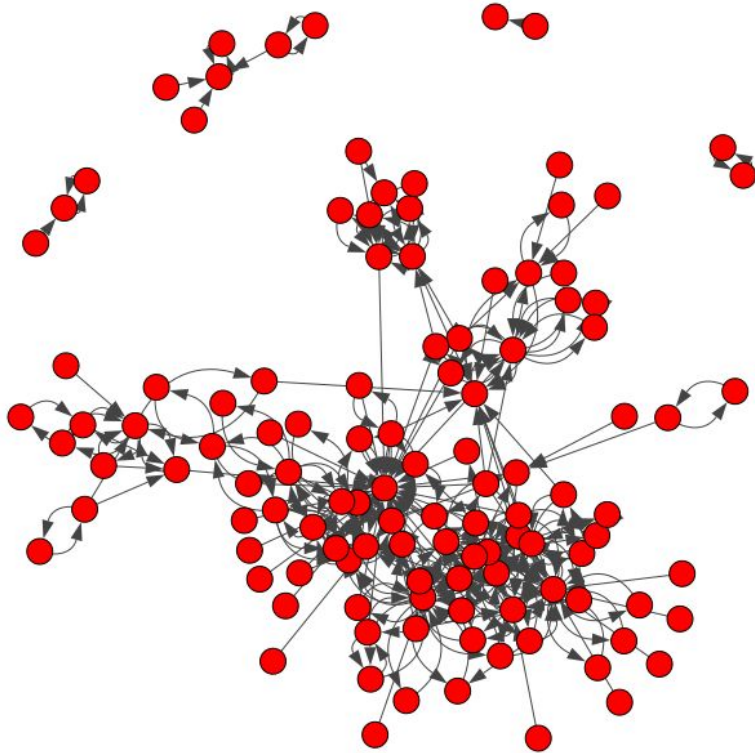
Main Influencers - Alka Maverick and maqbool_sm



#AmazonFires

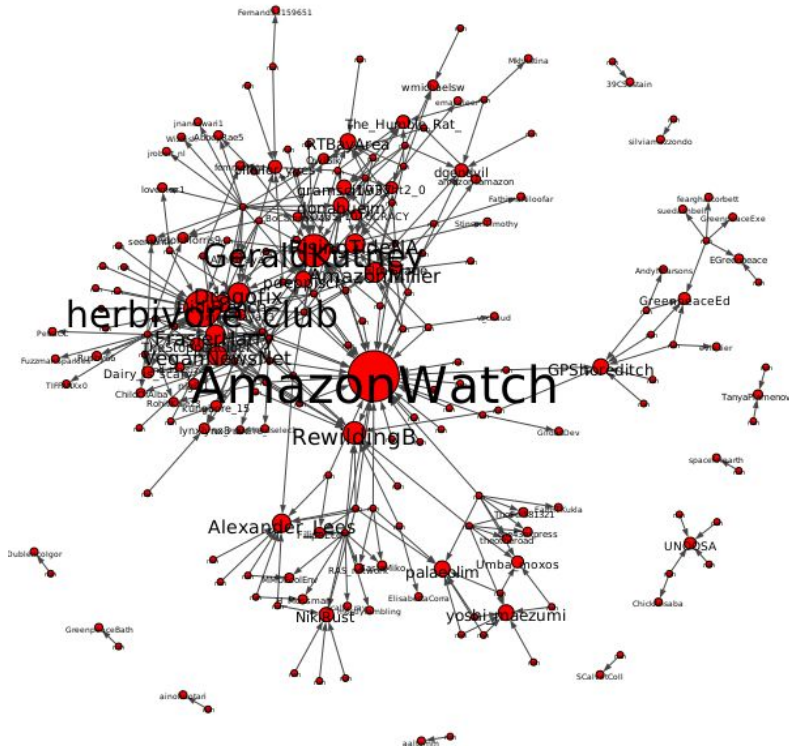


#AmazonFires



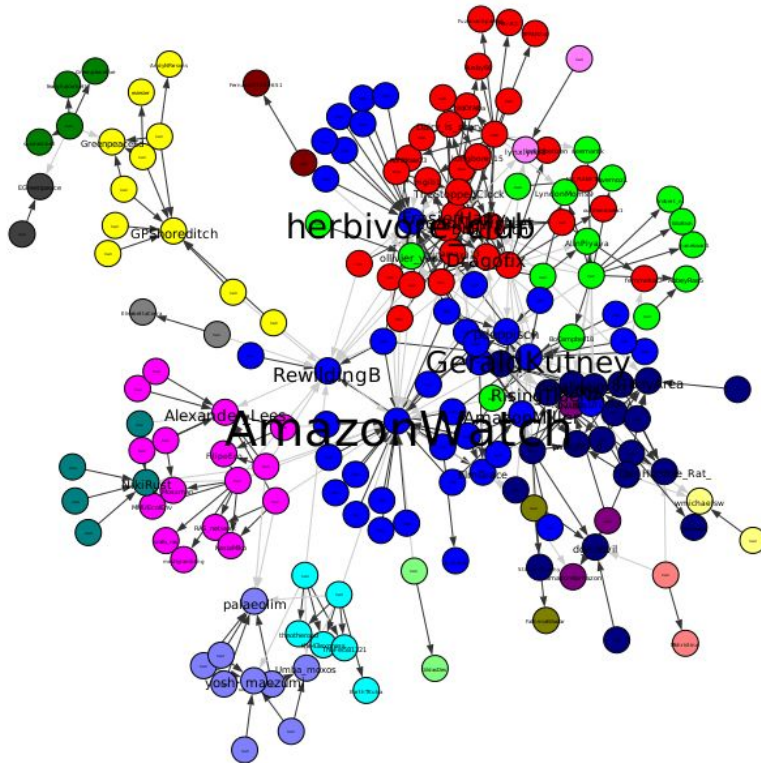
- 160 users
- 181 tweets over 4 days
- Wildfires in Amazon forest from August 15th to 22nd of 2019

Follower Followee Network



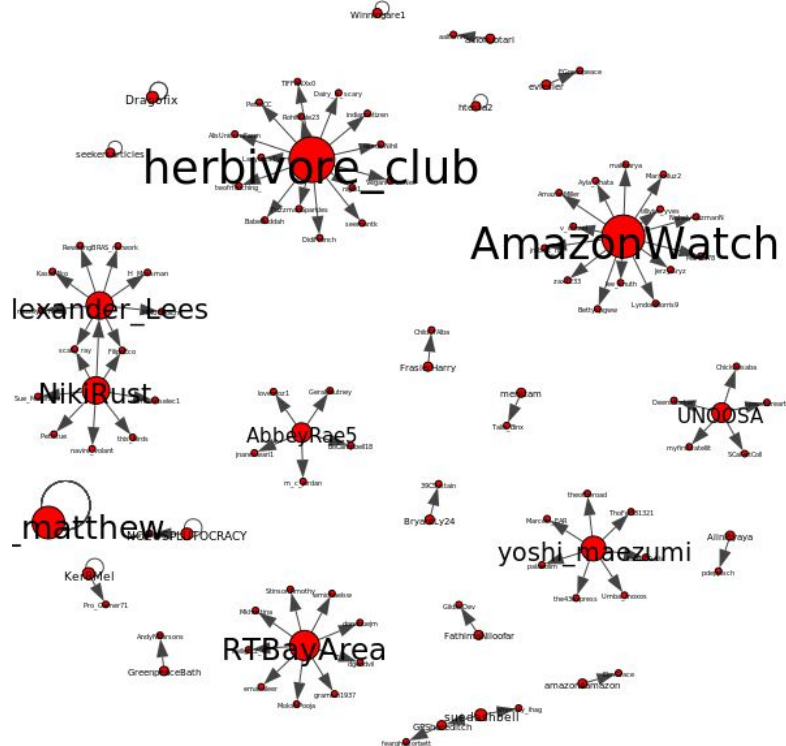
- Node - User
- Edge (i -> j) - i follows j
- Main Influencers - High Degree Centrality
 - AmazonWatch
 - herbivore_club

Communities



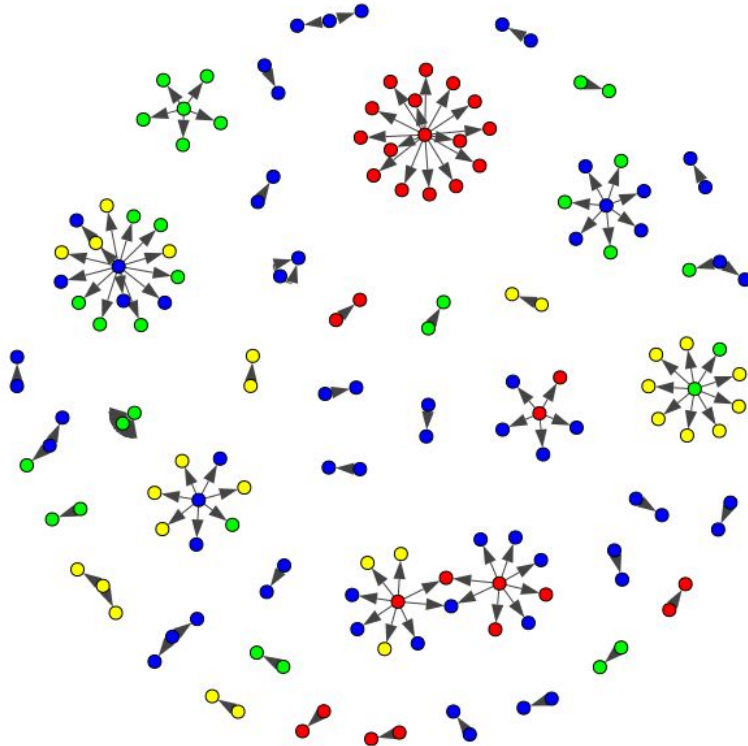
- Community detection based on random walks
- Two main influencers are part of same community

Retweet Network



- Node - User
- Edge (i->j) - j retweets i
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 - herbivore_club
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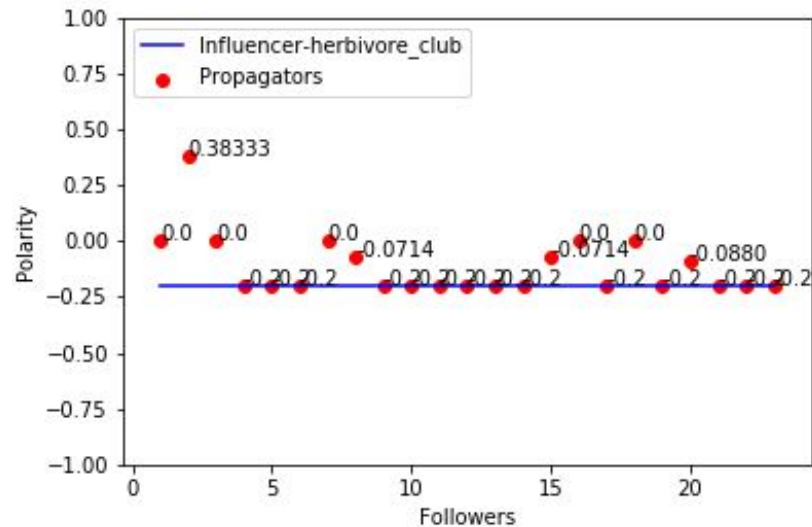
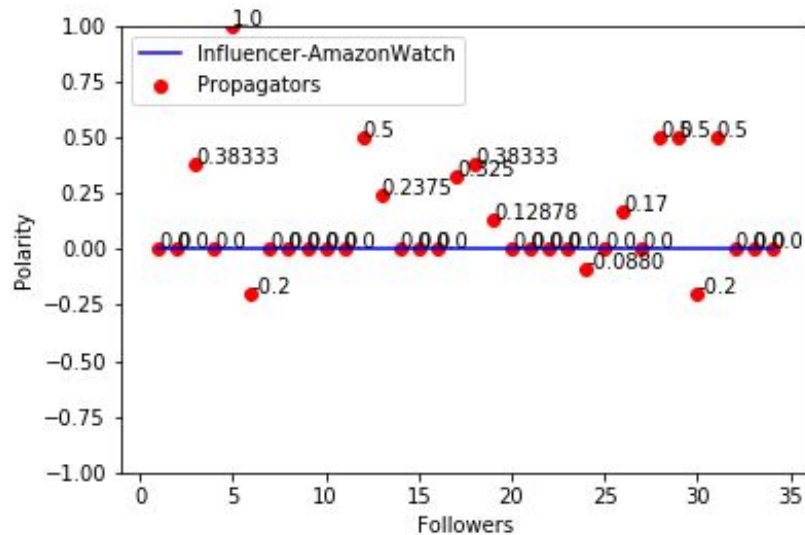
Analysis over time



- Retweet network
 - Day 1 - Red
 - Day 2 - Blue
 - Day 3 - Green
 - Day 4 - Yellow
- Communities over time

Sentiments of Influencers Vs Propagators

Main Influencers - AmazonWatch and herbivore_club

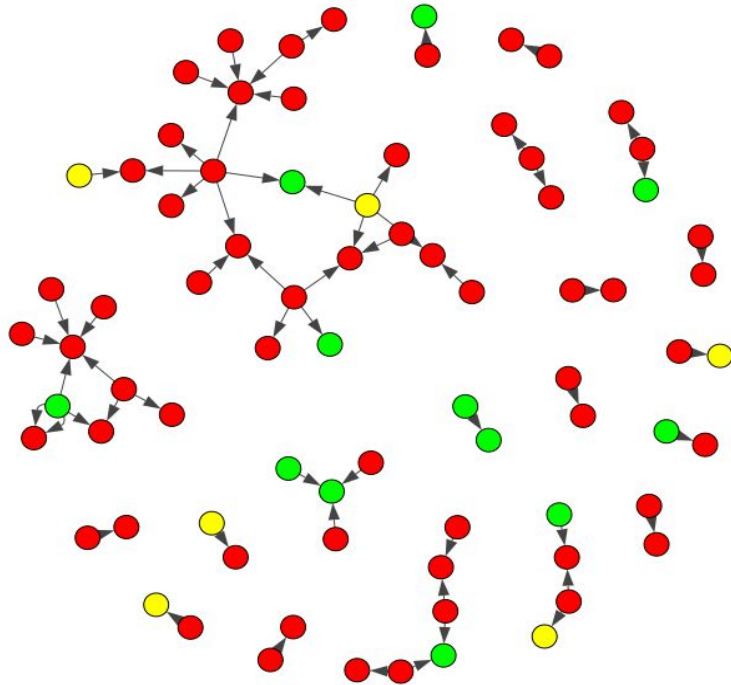


Social Learning





#LawyersVsDelhiPolice



Negative : Red

Positive : Green

Neutral : Yellow

- 29 Users were added
- Using developer access

Their sentiment was analysed using their previous tweets on this topic if available.

Hindi tweets were translated using google translate api.

Sentiment analysis using VADER in python.



#LawyersVsDelhiPolice

Hindi tweets were translated using google translate api.

"पूछने नहीं, बताने आया हूँ - हम अभी mla की shopping में busy हैं"\n

#WhereIsAmitShah \n#LawyersVsPolice #DelhiPolice #LawyersVsDelhiPolice
#DelhiPoliceVsLawyers #MaharashtraAssemblyPolls #ShivSenaVsBJP

I come to tell you not to ask we are now busy in shopping of mla\n

WhereIsAmitShah\nLawyersVsPolice DelhiPolice LawyersVsDelhiPolice
DelhiPoliceVsLawyers MaharashtraAssemblyPolls ShivSenaVsBJP.



#LawyersVsDelhiPolice

Sentiment analysis using VADER in python.

Negative:

"Amit shah sitting at home and reading comment under trend #WhereIsAmitShah "

"Police and lawyers fighting this script Akshay Kumar confused Roudi Rathod 2 Bnau or Jolly LLB 3 LawyersVsDelhiPolice"

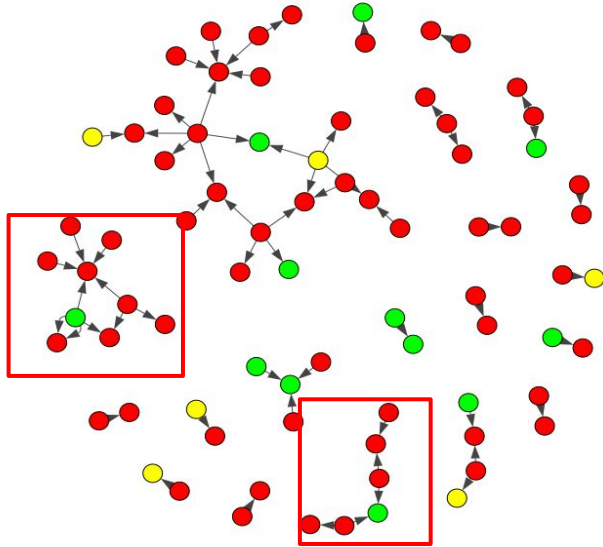
Positive:

"If you were given a choice to support one side in LawyersVsDelhiPolice issue which fruit would you like to eat in winters"

"Now what police is asking for protection and lawyers for justice Time change very fast We believe in lawyers but their behaviour is snatching our faith in judiciary and the dead word Justice"



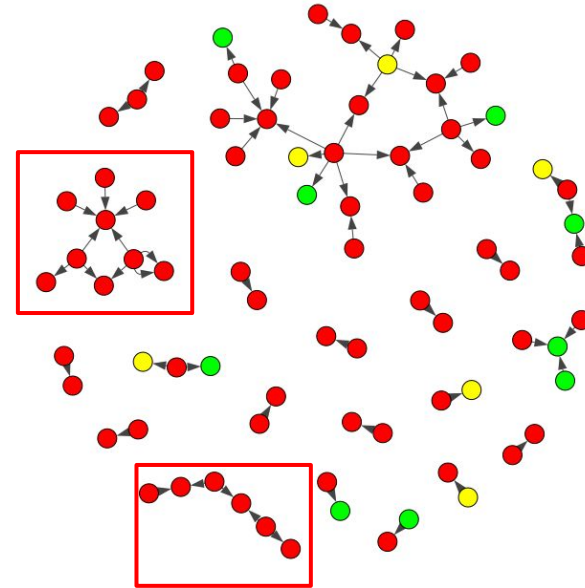
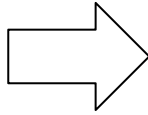
#LawyersVsDelhiPolice



Negative tweets : 111

Positive tweets : 29

Neutral tweets : 20



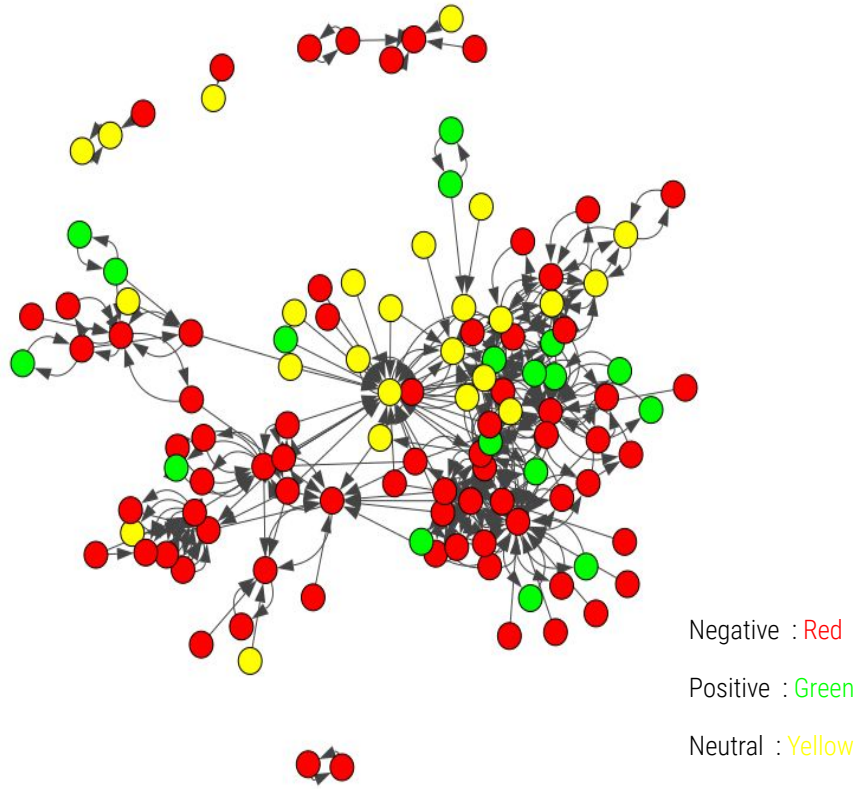
Negative tweets : 114

Positive tweets : 24

Neutral tweets : 20



#AmazonFires



Negative : Red

Positive : Green

Neutral : Yellow

- 160 Nodes

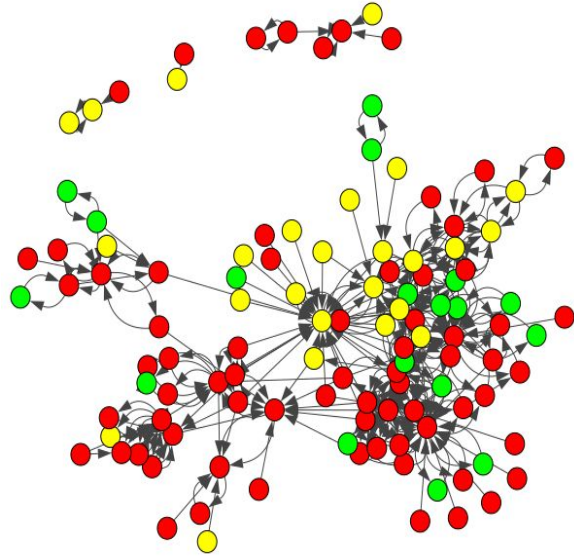
Sentiment analysis using VADER in python.

Follower - Followee graph.

Most of the users have negative responses.



#AmazonFires

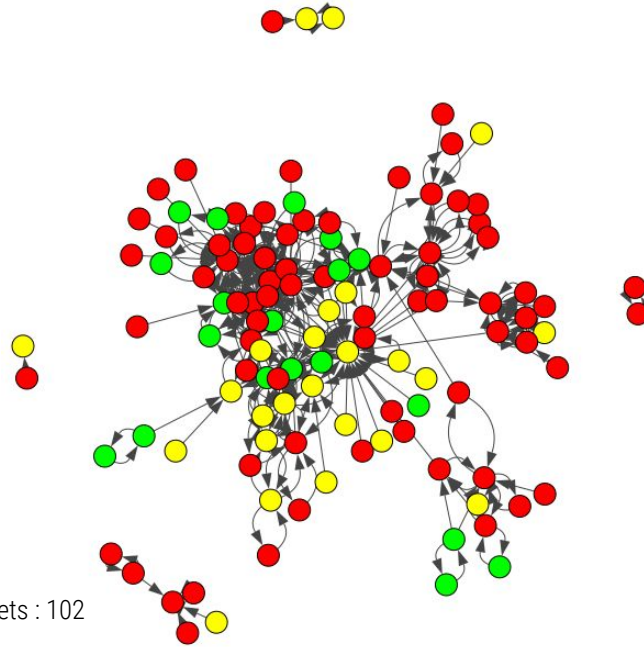
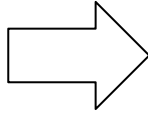


Negative tweets : 102



Positive tweets : 19

Neutral tweets : 39



Negative tweets : 102

Positive tweets : 21

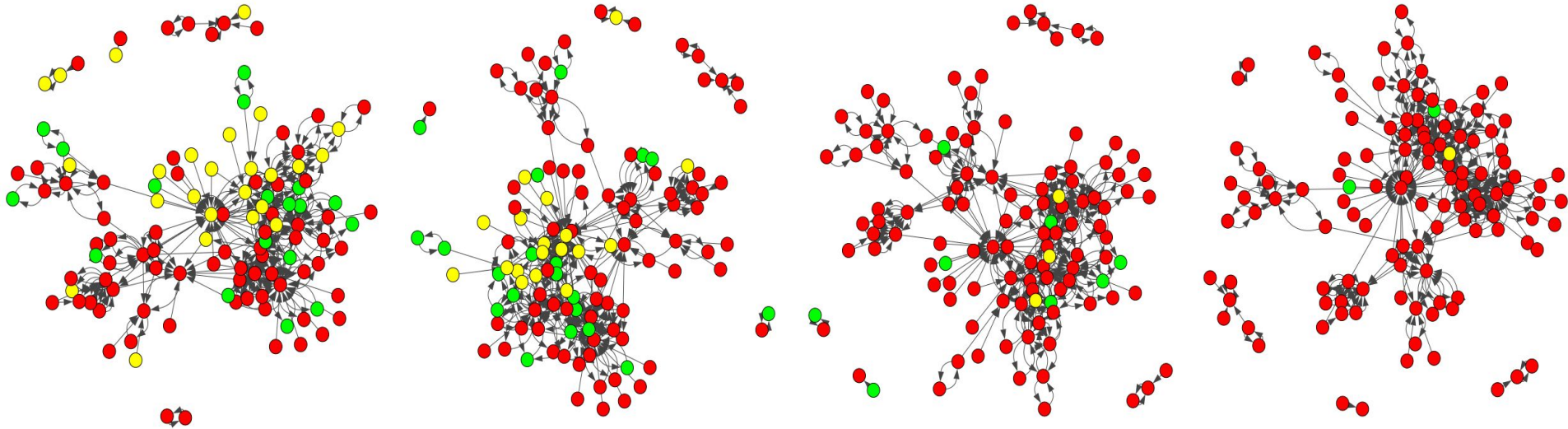
Neutral tweets : 37

Degroot Model

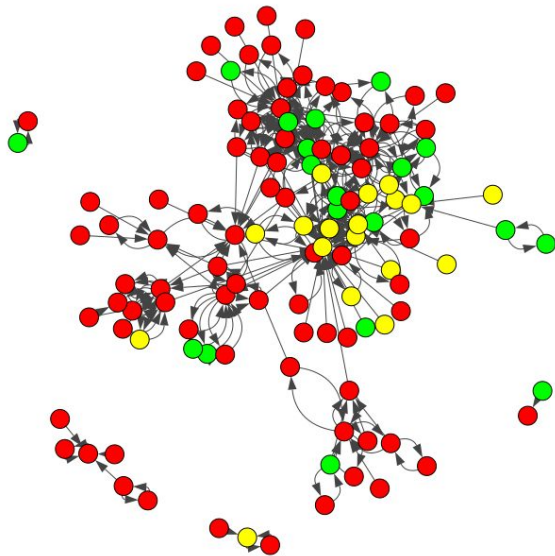
- It is a Non-Bayesian learning model.
- This model captures a rational updating process such that agents repeatedly form new beliefs by averaging their neighbors' decisions in the past period.
 - $b(t) = T * b(t - 1)$
- Where T is a stochastic $n \times n$ matrix of influence weights $T = (w_{ij})$.
 - n = Number of users/nodes.
 - w_{ij} = Number of times the i^{th} user retweeted j^{th} user.



#AmazonFires



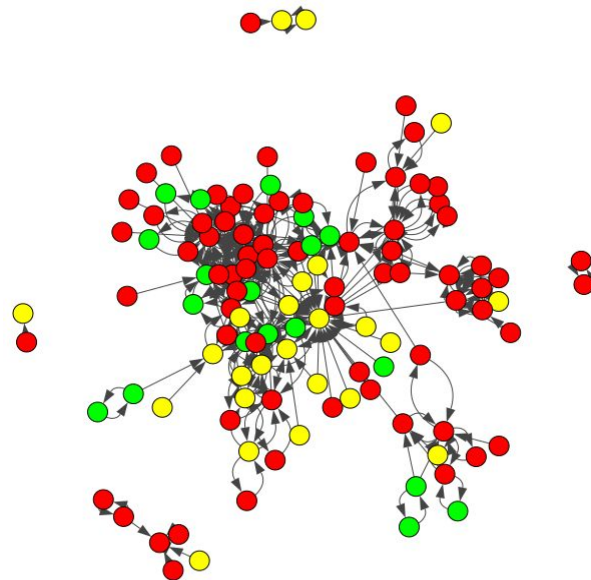
Predicted vs. Actual final sentiments



Negative tweets : 106

Positive tweets : 23

Neutral tweets : 31



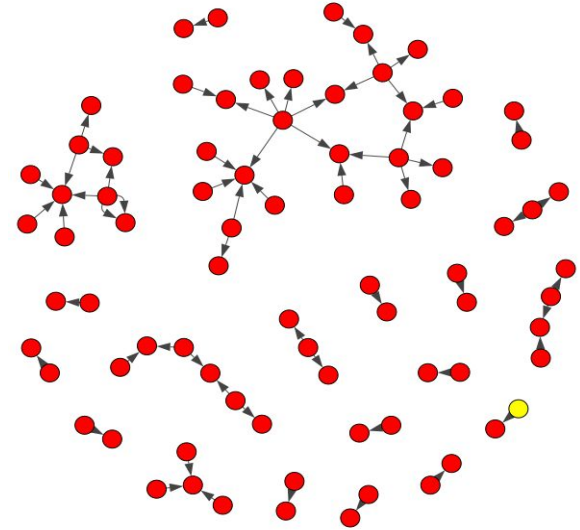
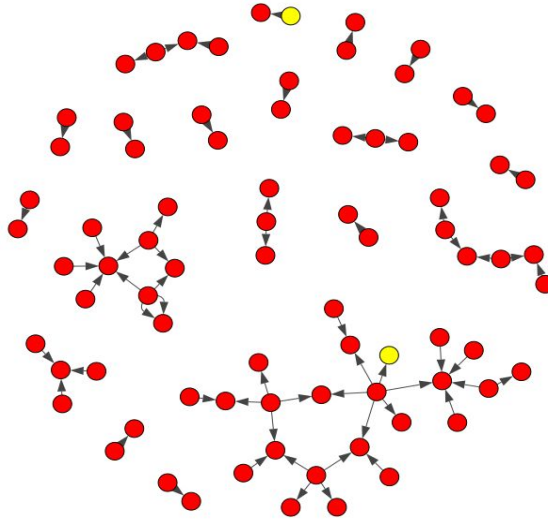
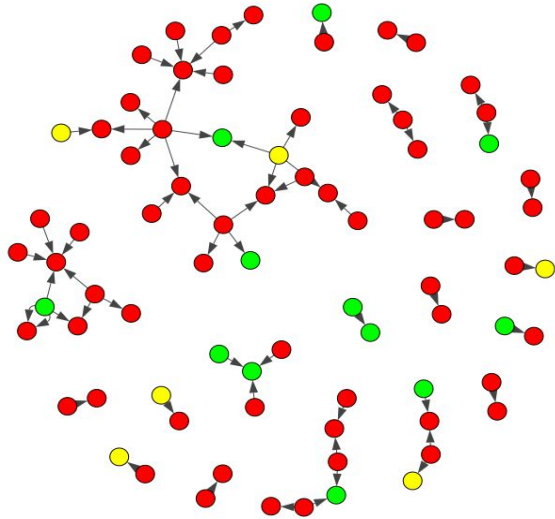
Negative tweets : 102

Positive tweets : 21

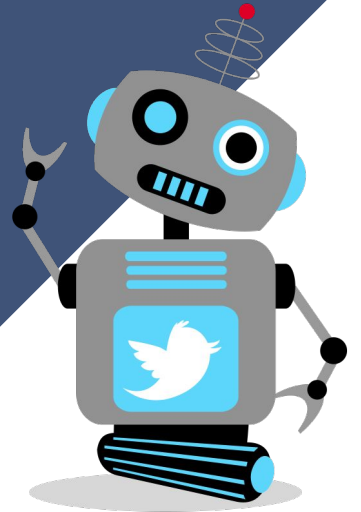
Neutral tweets : 37

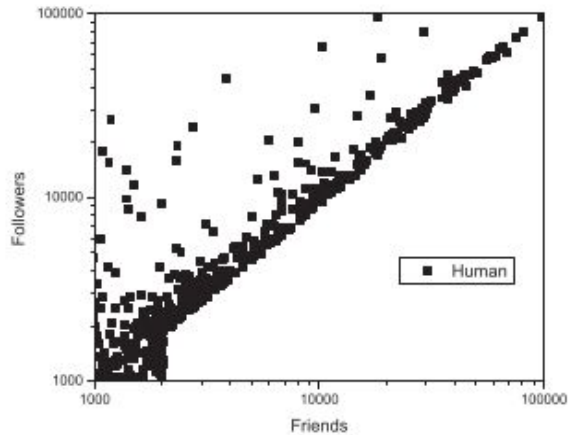


#LawyersVsDelhiPolice

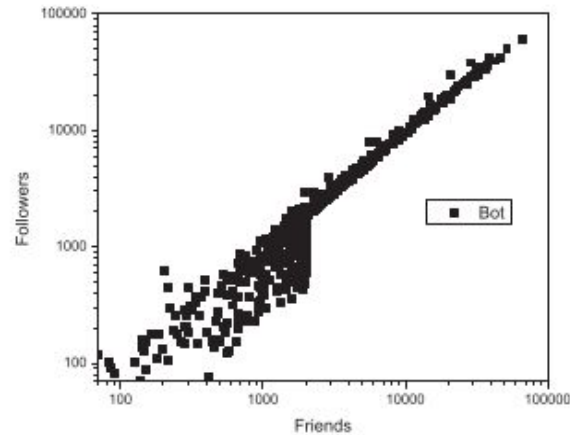


BOT Detection

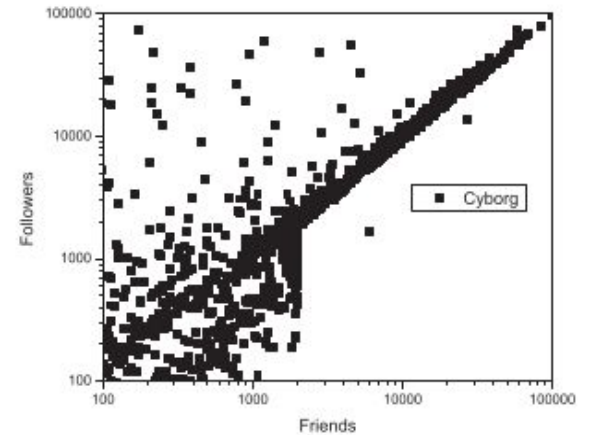




(a) Human



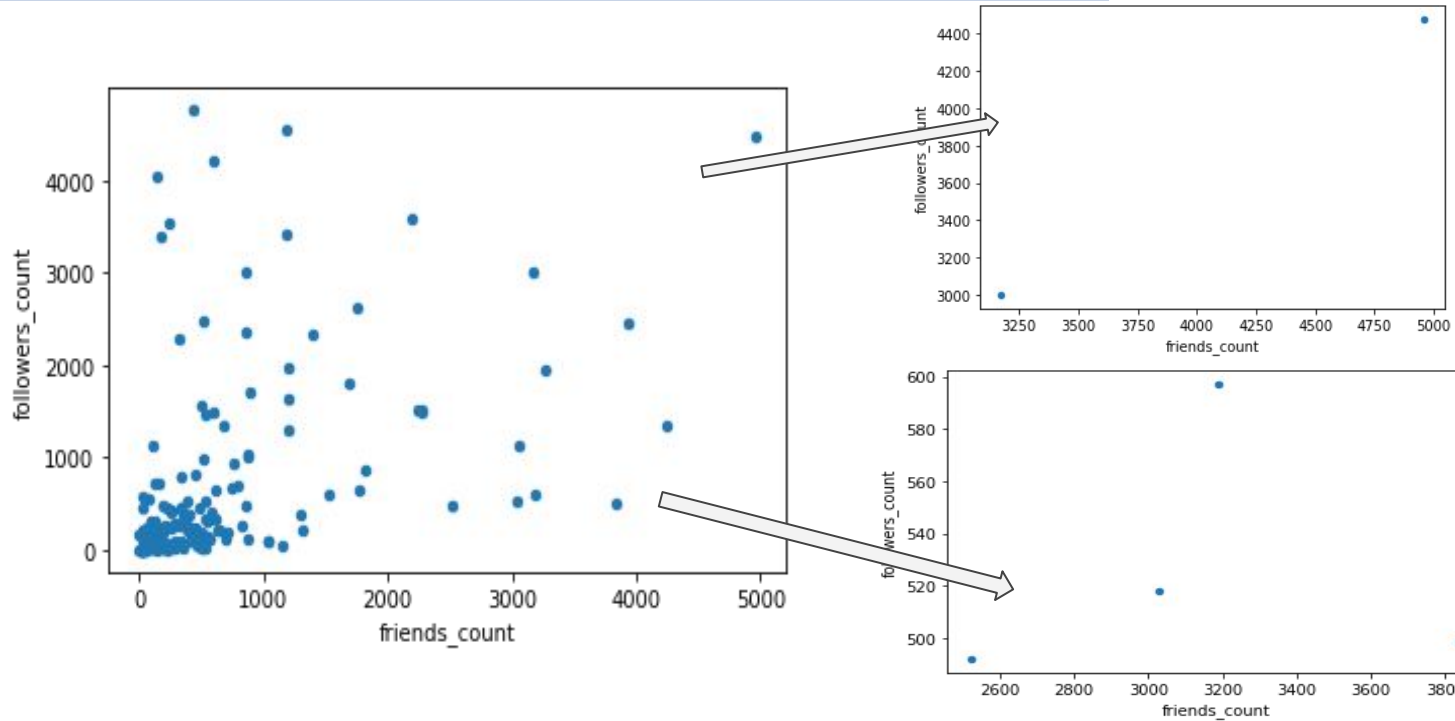
(b) Bot



(c) Cyborg

Chu, Zi & Gianvecchio, Steven & Wang, Haining & Jajodia, Sushil. (2012). Detecting Automation of Twitter Accounts: Are You a Human, Bot, or Cyborg?. Dependable and Secure Computing, IEEE Transactions on. 9. 811-824. 10.1109/TDSC.2012.75.

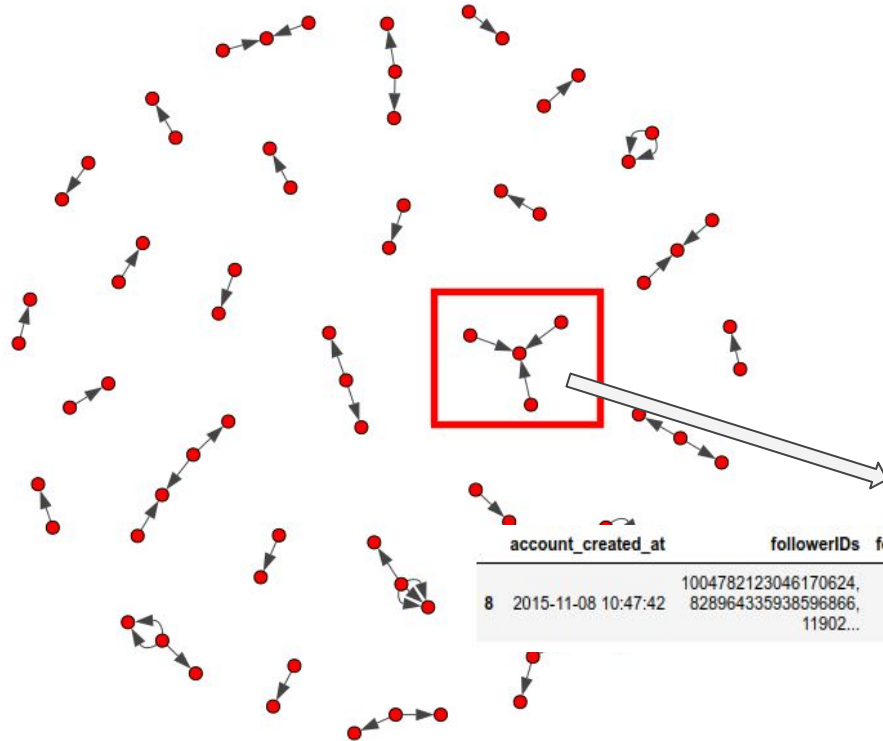
#LawyersVsDelhiPolice



Metadata Related Features

Binary features	Profile information features	Ratio features	Metadata content features
Defaults: <ul style="list-style-type: none">- Profile image- Background image- No user description Other: <ul style="list-style-type: none">- Profile verified- Location specified- No friends- No tweets	General: <ul style="list-style-type: none">- Number of followers- Number of friends- Number of tweets- Number of likes- Age of account- Account language Length: <ul style="list-style-type: none">- Profile name- Profile description	Activity: <ul style="list-style-type: none">- Ratio of following and followers (FE/FI)- Reputation ($FE/(FI + FE)$)- Given likes per friend- Given likes per follower Account age: <ul style="list-style-type: none">- Friends/Account age- Following rate (FI/AU)	Bot check: <ul style="list-style-type: none">- Name contains bot- Description contains bot Other content: <ul style="list-style-type: none">- Number of # in description- Keywords in description- URL(s) in description

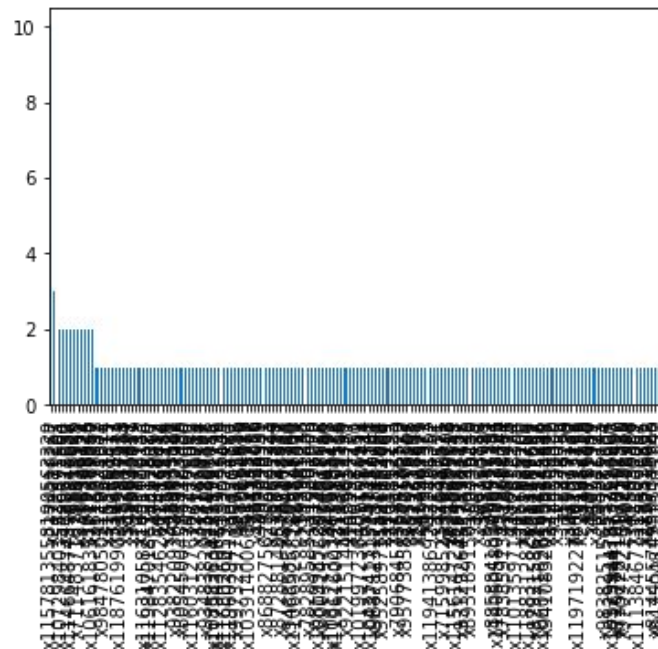
Tweet Frequency - Retweet Graph



This account seems to have retweeted three tweets from three different accounts but having similar content in under 2 minutes.

	account_created_at	followerIDs	followers_count	friendIDs	friends_count	id	location	name	screen_name	user_id	verified
8	2015-11-08 10:47:42	1004782123046170624, 828964335938596866, 11902...	499	1063059712386592768, 831370208392548352, 83106...	3840	9	Dhenkanal, Odisha	Pankaj Kumar Nayak	PankajDKL	4167378493	False

#AmazonFires - Frequency Analysis



54	55	NO2USPLUTOCRACY	1186063758432620549, 192715700, 1121...	24702789, 1075244237275480064, 1131...	2116	2037	CLIMATE WARRIOR # 1 Bernie 2020 or DEATH	NaN	2015-06-06 11:29:34
58	59	scally_ray	989628378, 109654333, 382826939, 30589555, 816...	1684230956, 1188505570149588992, 2700568116, 1...	1277	399	Ray Scally	Disley, Cheshire, - ex Dublin	2016-03-20 09:25:11
60	61	Alexander_Lees	1323030684, 815235815441731585, 57249937, 1188...	2471225112, 972540235, 3742194027, 2814511846,...	3489	1136	Alex Lees	Manchester, England	2016-01-01 13:15:31
62	63	Winningare1	3489303862, 1164221449722355712, 9060700604265...	224126124, 1196778982886297610, 11876164575359...	13621	3982	WINNING ARENA	Lagos, Nigeria	2018-12-12 22:38:23
76	77	NO_PLANETB_	1151940365718609920, 1120186334, 1197960108594...	2733199069, 1678934198, 226856497, 2695527631,...	170	95	THERE IS NO PLANET B	Luebeck, Germany	2018-11-11 13:55:15
95	96	AmazonWatch	798212152641261568, 80047208, 1191336780412465...	704470681665216512, 299320161, 231923667, 9641...	79317	3669	AMAZON WATCH	Oakland, California	2009-03-05 20:15:00
125	126	ame_matthew	741623192083521536, 300017145, 978751530600927...	741623192083521536, 1006419421244678144, 24518...	214	136	Matt - Creative Director	NaN	2019-08-04 00:40:38
128	129	DebbyVanharling	2702796576, 1046820731512868866, 357626659, 11...	17762040, 66449043, 1196264645444718604, 10153...	179	818	ProsocialWorld Debbyvanharling	NaN	2019-07-04 05:15:38

Frequency analysis

	user_id	status_id	created_at	screen_name	text	source
136	x1157813558190563329	x1197739175656574976	2019-11-22 04:50:47	ame_matthew	in stock now! portion of all proceeds will be ...	Twitter Web App
137	x1157813558190563329	x1197739042789453825	2019-11-22 04:50:15	ame_matthew	https://t.co/g4dQwGCbxi portion of all proceed...	Twitter Web App
138	x1157813558190563329	x1197738969020035072	2019-11-22 04:49:57	ame_matthew	https://t.co/khjTY2n4E1 <<< portion o...	Twitter Web App
139	x1157813558190563329	x1197739148691427329	2019-11-22 04:50:40	ame_matthew	portion of all proceeds goes directly to fire ...	Twitter Web App
140	x1157813558190563329	x1197739055259082753	2019-11-22 04:50:18	ame_matthew	https://t.co/W2E1L6n4du portion of all proce...	Twitter
141	x1157813558190563329	x1197738849411055617	2019-11-22 04:49:29	ame_matthew	https://t.co/00e1GRq <<< Save t...	
142	x1157813558190563329	x1197738787201114114	2019-11-22 04:49:14	ame_matthew	https://t.co/BLX3wk <<< portic...	
143	x1157813558190563329	x1197738704032256000	2019-11-22 04:48:54	ame_matthew	in stock now! port all proceeds will	
144	x1157813558190563329	x1197738883837882368	2019-11-22 04:49:37	ame_matthew	https://t.co/QP9Qbs <<< portic...	
145	x1157813558190563329	x1197738941920636929	2019-11-22 04:49:51	ame_matthew	https://t.co/z9z081 <<< Save t...	App

	user_id	status_id	created_at	screen_name	text	source
53	x2374216267	x1198220377719226368	2019-11-23 12:42:54	GPSHoreditch	Today we're in Whitechapel campaigning for @bu...	Twitter for iPhone
54	x2374216267	x1198211136941887488	2019-11-23 12:06:11	GPSHoreditch	Today we're taking messages from @BurgerKingUK...	Twitter for iPhone
55	x2374216267	x1198211136941887488	2019-11-23 12:06:11	GPSHoreditch	Hey @BurgerKingUK, the public in Whitechapel...	Twitter for iPhone

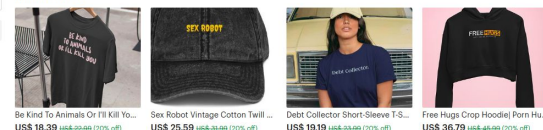


AntiSocialBohemian
All Dad Hats 25% OFF.
California, United States 6 Sales | On Etsy since 2019
Favourite shop (10)

Items

-
- All 65
 - On sale 65
 - Hoodies & Sweatshirts 17
 - Dad Hats 5
 - Unisex T-Shirts 30
 - Anti So Boh Collection I 2
 - Ladies Crocs Toes 7

Featured items



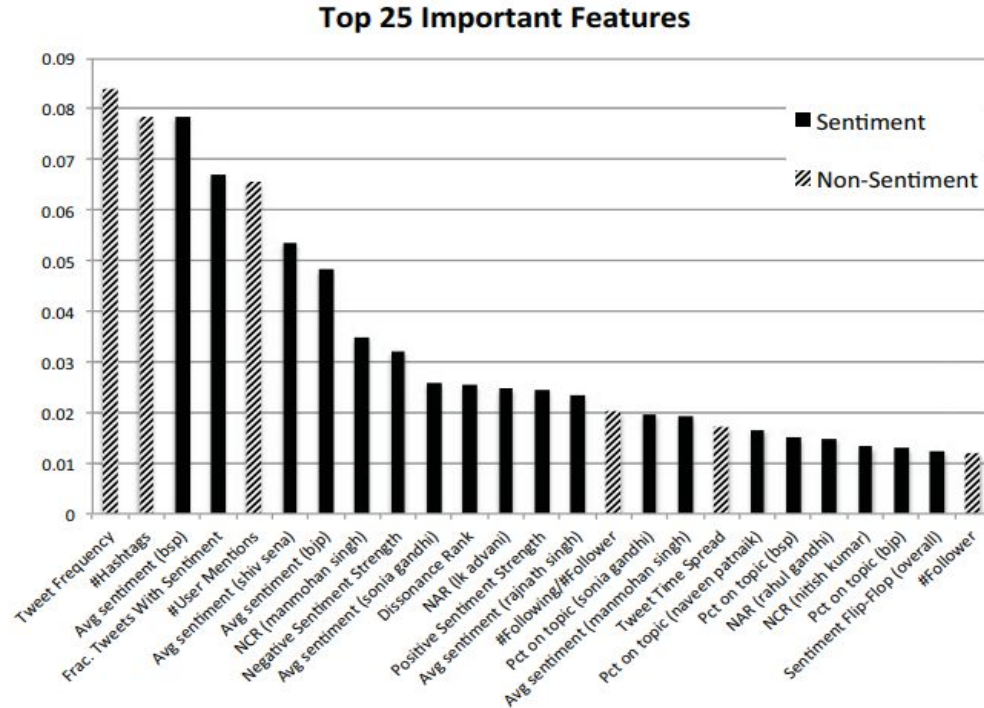
SHOP OWNER

Samantha Chrisp
Contact

Sort: Custom



Sentiment Related Features



J. P. Dickerson, V. Kagan and V. S. Subrahmanian, "Using sentiment to detect bots on Twitter: Are humans more opinionated than bots?," *2014 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM 2014)*, Beijing, 2014, pp. 620-627.

Sentiment - #AmazonFires

```
11          [0.0, 0.6124]
41          [0.1779, 0.1779]
51      [-0.25, -0.2263, -0.128]
53          [-0.128, -0.128]
54          [-0.7717, -0.34]
58          [0.0, 0.6124]
60          [0.6124, 0.0]
62          [0.799, 0.799]
76          [0.0, -0.4404]
95          [0.09, -0.0798]
125      [-0.34, -0.34, -0.34, -0.34, -0.34, 0.5994, -0.34]
128          [0.128, -0.7717]
```

Name: sentiments, dtype: object

('Hey .@BurgerKingUK , the public in Whitechapel are calling on you to take\raction and stop flame grilling the amaz on #amazonfires #BKmeltdown @GPShoreditch <https://t.co/SHAerKBeZe>,
• Hey .@BurgerKingUK , the public in Whitechapel are calling on you to take\raction and stop flame grilling the am azon #amazonfires #BKmeltdown @GPShoreditch <https://t.co/AJgfaP3Ktc>')

("DON'T HESITATE TO DROP YOUR INBOX MESSAGES OR CALL ☎+2349016694576 IF YOU ARE INTERESTED IN ANY OUR ODDS OR INQUIRY/COMPLAIN\NAM ALWAYS AVAILABLE TO REPLY YOUR MESSAGES\n\nALOYS/ #MUFC #LIVARS #AmazonFires #BBNajia #SaturdayThou ghts #SaturdayMotivation #WizkidReturns #FidelityYea5",
"DON'T HESITATE TO DROP YOUR INBOX MESSAGES OR CALL ☎+2349016694576 IF YOU ARE INTERESTED IN ANY OUR ODDS OR INQUIRY/COMPLAIN\NAM ALWAYS AVAILABLE TO REPLY YOUR MESSAGES\n\nALOYS/ #MUFC #LIVARS #AmazonFires #BBNajia #SaturdayThou ghts #SaturdayMotivation #WizkidReturns #FidelityYea5")



AntiSocialBohemian

All Dad Hats 25% OFF.

📍 California, United States | 6 Sales | On Etsy since 2019

♡ Favourite shop (10)

Sentiment - Hate Speech, Influence

3527	4989	Dragofix	Finland	2009-07-20 22:31:24	False	x58613026	0.414162	2	[0.1779, 0.1779]
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('Go tell @blackrock what you think about #AmazonRainforestFire They are #investing in #deforestation of #Amazon! #AmazonForest #AmazonRainforest #AmazonFire #AmazonFires #SaveTheAmazon #forest #forests #rainforest #rainforests #environment',

"As the #Amazon Burns, #BlackRock Named As World's Largest #Investor in #Deforestation <https://t.co/raJnI007vB> #AmazonForest #AmazonRainforest #SaveTheAmazon #AmazonFire #AmazonFires #AmazonRainforestFire #environment #forest #forests #rainforest #rainforests #StopDeforestation")



THANKS!