

Social networks computing

Assignment 1

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Comparing Malicious vs. Benign Twitter Subgraphs

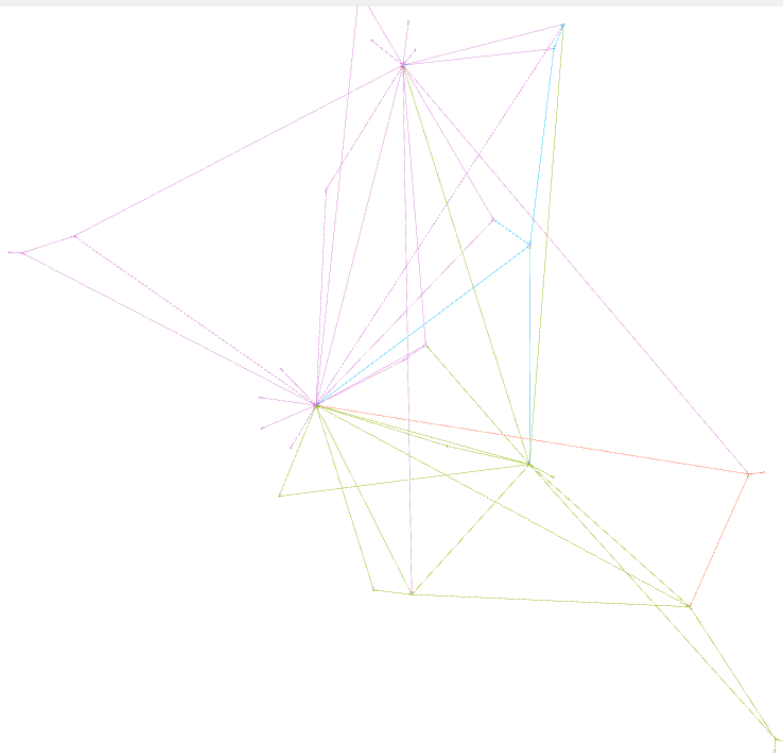
(WICO Dataset – 5G Conspiracy vs. Normal Communities)

This report analyzes two Twitter interaction subgraphs from the WICO dataset:

- Malicious (misinformation): 5G_Conspiracy_Graphs/365
- Benign (normal): Non_Conspiracy_Graphs/2165

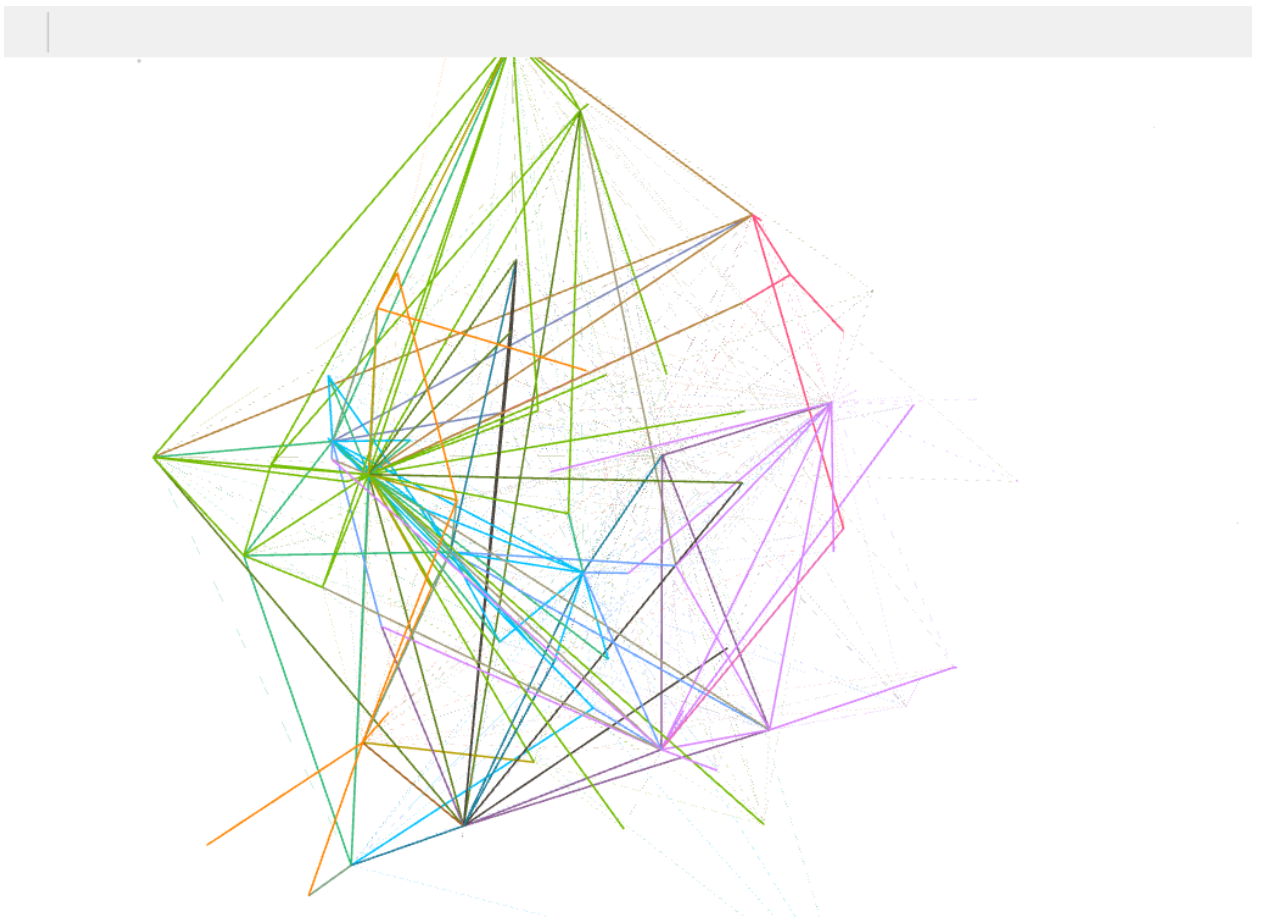
Both graphs are of comparable size to ensure a fair comparison. The networks are built from retweets and mentions, and were treated as undirected graphs following standard practice in misinformation studies.

❖ 5G Conspiracy Graph




Data Table ×		Statistics ×													
Nodes Edges		Configuration													
		time	friends	followers	In-Degree	Out-Degree	Degree	Clustering Coeffice...	Modularity Cla...	Component ...	Strongly-Connected ...	Eigenvector Centra...	Authority	Hub	PageRank
57848941	13265	16	16	19	20	39	0.095238	0	0	0	0	1.0	0.516556	0.516536	0.170928
57646483	0	15	15	14	13	27	0.126374	0	0	0	0	0.748985	0.387173	0.387165	0.11426
57647942	16774	16	16	9	9	18	0.209091	3	0	0	0	0.681529	0.352246	0.352244	0.087469
129642528	13482	15	15	4	5	9	0.6	3	0	0	0	0.458672	0.237576	0.237581	0.040195
21428347	583	13	13	4	2	6	0.666667	1	0	0	0	0.399342	0.206813	0.20682	0.032507
105157492	14827	15	15	5	4	9	0.45	3	0	0	0	0.399765	0.205935	0.205938	0.041644
152912782	40313	12	12	4	4	8	0.666667	0	0	0	0	0.397293	0.2058	0.205806	0.033212
93826244	13408	14	14	4	3	7	0.333333	1	0	0	0	0.333786	0.172914	0.172918	0.032784
210238380	19801	13	13	4	4	8	0.333333	2	0	0	0	0.332494	0.171208	0.171215	0.036099
210185573	636	13	13	3	3	6	0.666667	0	0	0	0	0.313567	0.162337	0.162342	0.025498
152724605	155	12	11	3	3	6	0.666667	0	0	0	0	0.294987	0.151813	0.151819	0.027212
152660611	2207184	12	12	2	1	3	1.0	0	0	0	0	0.263296	0.136263	0.13627	0.018531
152899140	229	13	13	2	2	4	1.0	0	0	0	0	0.263296	0.136263	0.13627	0.018531
152619251	13295	13	12	0	2	2	1.0	3	0	1	0	0.252701	0.130998	0.131003	0.018347
32247801	13736	13	13	2	1	3	1.0	3	0	0	0	0.252701	0.130998	0.131003	0.018347
36216431	905	12	12	2	3	5	0.333333	1	0	0	0	0.222579	0.115639	0.115638	0.025481
57651461	14259	11	11	2	2	4	1.0	3	0	0	0	0.218893	0.113709	0.113712	0.018419
44566213	13396	13	12	2	2	4	1.0	0	0	0	0	0.209915	0.108918	0.108921	0.018642
58149224	13782	13	12	3	3	6	0.333333	0	0	0	0	0.201942	0.103122	0.103125	0.030637
152545857	15205	13	12	3	4	7	0.166667	3	0	0	0	0.174805	0.088175	0.088175	0.04138
581186211	13514	10	10	1	1	2	0.0	0	0	0	0	0.150623	0.077885	0.077889	0.011588
833344155	126142	8	8	1	1	2	0.0	0	0	0	0	0.150623	0.077885	0.077889	0.011588

❖ Non Conspiracy Graph



Data Table		Statistics											
Nodes		Configuration											
Id	time	friends	followers	Degree	Clustering Coefficient	Number of triangles	Modularity Class	Component ID	Authority	Hub	PageRank	Eigenvector Centrality	
48651903	0	10	15	66	0.094639	203	3	0	0.346363	0.346358	0.089756	1.0	
128787039	8032	10	15	45	0.164646	163	8	0	0.297015	0.297012	0.052261	0.850739	
36633304	25409	13	14	40	0.237179	185	12	0	0.295828	0.295827	0.045769	0.845636	
114622527	14056	14	14	42	0.134727	116	10	0	0.25253	0.252527	0.050995	0.724835	
701087825	18477	10	10	27	0.25641	90	10	0	0.201694	0.201693	0.031514	0.577963	
289203181	32943	12	13	22	0.385281	89	12	0	0.197969	0.197969	0.024912	0.564121	
44550738	22593	11	13	18	0.477124	73	3	0	0.181093	0.181093	0.020608	0.516483	
155642687	13470	12	13	19	0.415205	71	8	0	0.176939	0.17694	0.023038	0.50532	
384551041	10378	10	10	19	0.397661	68	10	0	0.175206	0.175207	0.022147	0.500867	
107263929	5527	11	12	23	0.264822	67	3	0	0.172579	0.172579	0.027706	0.495593	
10977710	18111	13	11	20	0.305263	58	10	0	0.165909	0.16591	0.023842	0.475314	
72050567	12895	12	10	21	0.252381	53	9	0	0.160282	0.160282	0.026257	0.459676	
75179013	12217	10	10	13	0.628205	49	8	0	0.152521	0.152522	0.015053	0.434619	
78104848	28572	12	10	14	0.461538	42	5	0	0.143291	0.143292	0.017417	0.410066	
215944821	16176	11	10	14	0.43956	40	12	0	0.134327	0.134328	0.016866	0.384936	
566012303	10124	10	8	10	0.822222	37	8	0	0.132447	0.132448	0.011812	0.376822	
5430551	34406	15	15	19	0.233918	40	12	0	0.130052	0.130052	0.024575	0.373198	
48706106	9771	13	9	10	0.688889	31	3	0	0.121234	0.121235	0.012016	0.345627	
163980582	55863	11	11	9	0.722222	26	12	0	0.12079	0.120792	0.010943	0.345641	
217123388	9978	12	10	9	0.777778	28	12	0	0.119016	0.119017	0.010848	0.339243	
155592284	21026	11	11	12	0.409091	27	10	0	0.117176	0.117177	0.014428	0.335636	
431100606	16958	11	10	11	0.490909	27	5	0	0.114598	0.114598	0.01388	0.328857	

Metric	5G Conspiracy #365	Non-Conspiracy #2165
Nodes	88	98
Edges	78	523
Average Degree	3.091	7.691
Graph Density	0.097	0.108
Avg. Clustering Coefficient	0.353	0.587
Modularity (Q)	0.25	0.229
Connected Components	2	9
Top HITS Authority (estimated)	≈0.42	≈0.28
Top PageRank (estimated)	≈0.019	≈0.013



Fake followers identification:

Subgraph	Top Node ID	Followers	Friends	Ratio	Likely Fake?
5G Conspiracy	57848941	16	16	0.94	No
Non-Conspiracy	48651903	115	101	1.13	No