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 CSE 494: AI for Cyber Security  
 Shakarian - Friday 1 pm  
 April 12th, 2019

### Lab 9 Exercises

1. Top 10 nodes by in-degree from merged graph:

	node_id	indegree
2994	ClockOfTheLongNow	349
1887	teddilicious	342
2592	JimmyGroove	304
4476	chunkypants	302
194	houinator	279
1081	BaylorNinja	259
74	cassander	257
2248	Dark-Ulfberht	223
1033	yoda133113	213

2. Betweenness, closeness, and page rank of top 10 nodes by in-degree from merged graph:

	node_id	indegree	betweenness_cent	closeness_cent	pagerank
2994	ClockOfTheLongNow	349	0.054096994	0.393662506	0.00857284
1887	teddilicious	342	0.037143685	0.392959746	0.00809913
2592	JimmyGroove	304	0.04895396	0.395075593	0.00713213
4476	chunkypants	302	0.045322518	0.391291045	0.00703545
194	houinator	279	0.022697348	0.3871239	0.00737548
1081	BaylorNinja	259	0.032095172	0.381312012	0.00608927
74	cassander	257	0.030404702	0.382970531	0.00611654
2248	Dark-Ulfberht	223	0.026569059	0.373828957	0.00524693
1033	yoda133113	213	0.030138536	0.368509405	0.00477269
1141	uncannylizard	209	0.027278267	0.377713357	0.00493854

3. Recomputed modularity after removing top 10 nodes by in-degree from merged graph:

Modularity before removing top 10 nodes: 0.24630034888138952  
**Modularity after removing top 10 nodes: 0.2756273231121626**