

Privacy and Security in Online Social Media

Course on NPTEL

NOC21-CS28

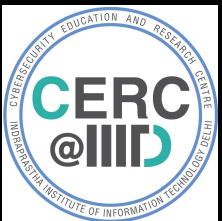
Week 7.1

Ponnurangam Kumaraguru (“PK”)

Full Professor

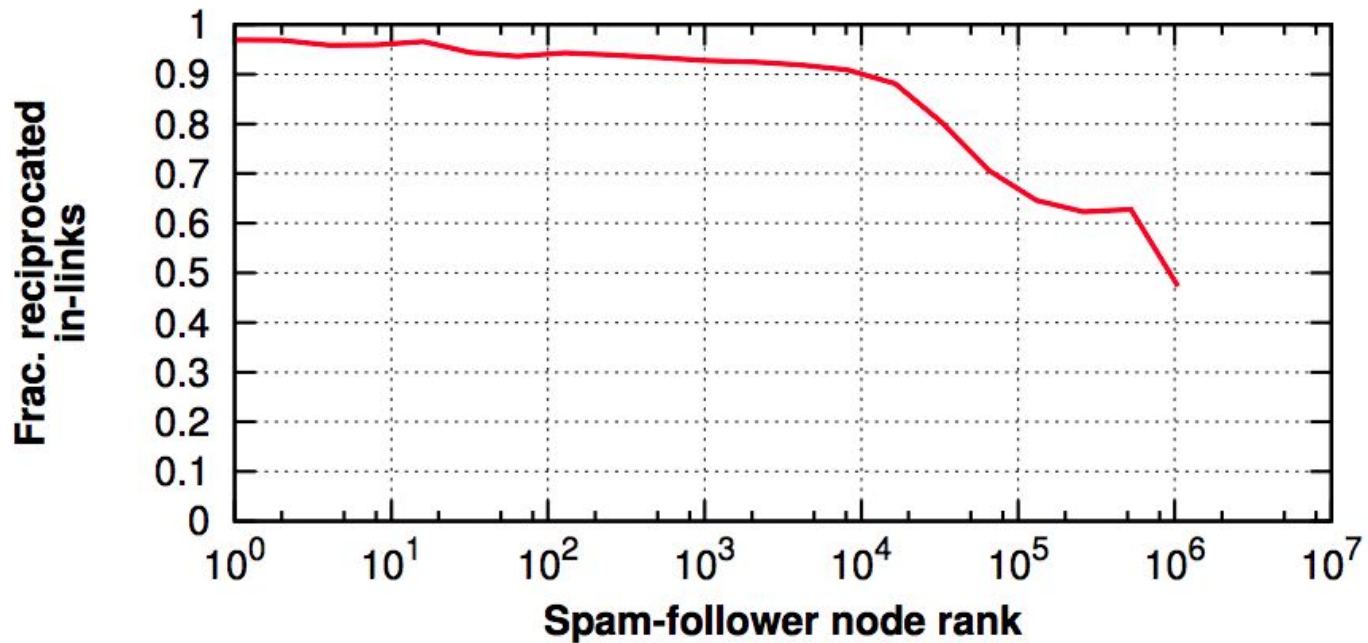
ACM Distinguished Speaker

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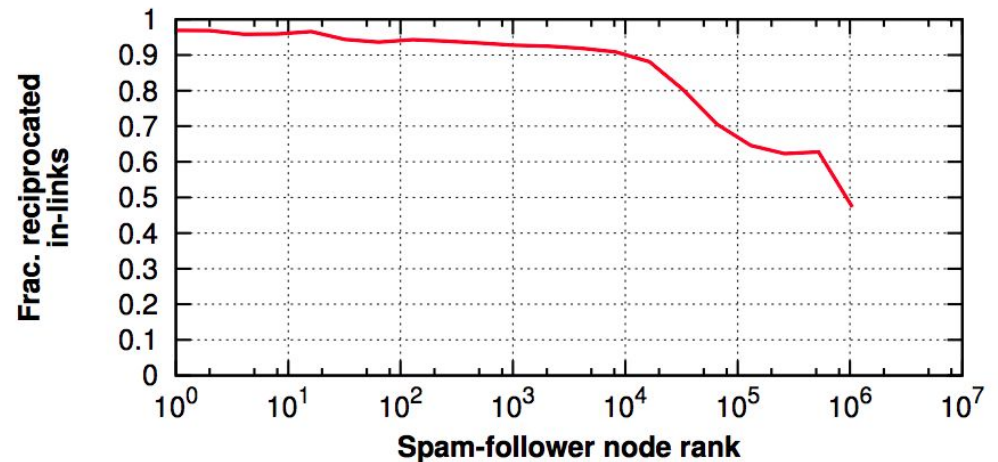
Spammers

- Fraction of reciprocated in-links from spammers vs spam-follower node rank



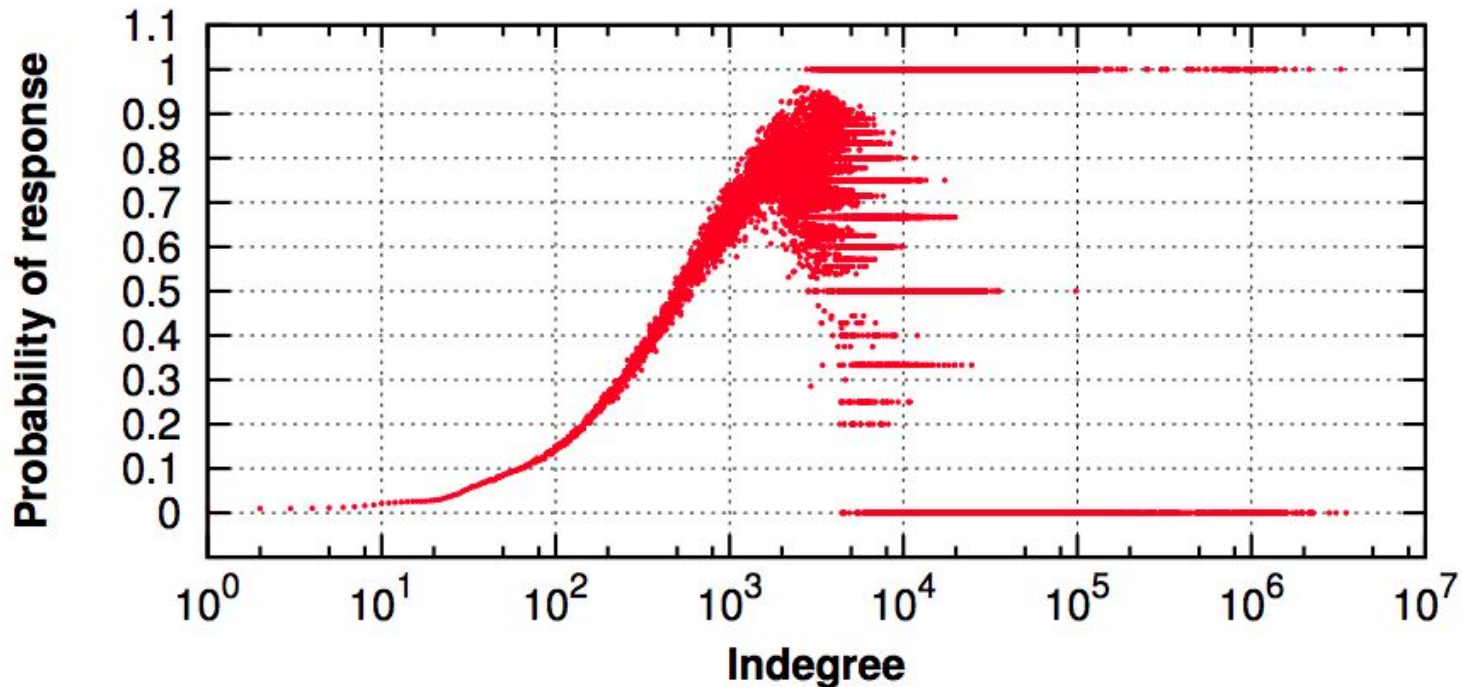
Spammers

- Top 100,000 spam-followers account for 60% of all links acquired by the spammers
- Top spam-followers tend to reciprocate all links established to them by spammers



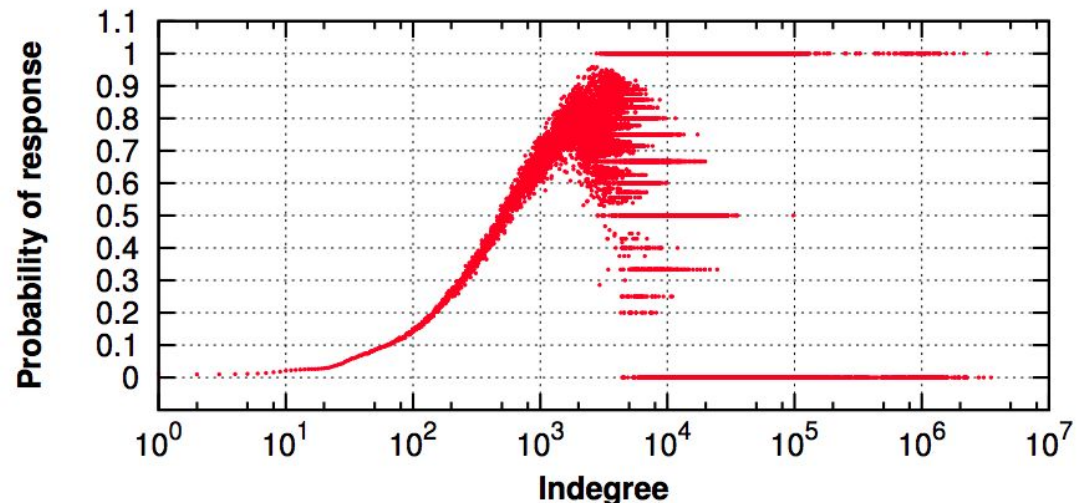
Popular users more likely

- Probability of response vs indegree for all users targetted by spammers



Popular users more likely

- Probability of response vs indegree for all users targetted by spammers
- Users with low indegree do not reciprocate to links from spammers.
- Responsiveness increases with number of followers



Top 5 link farmers

- Twitter account bios
- Having most links to spammers and highest pagerank
- Popular accounts

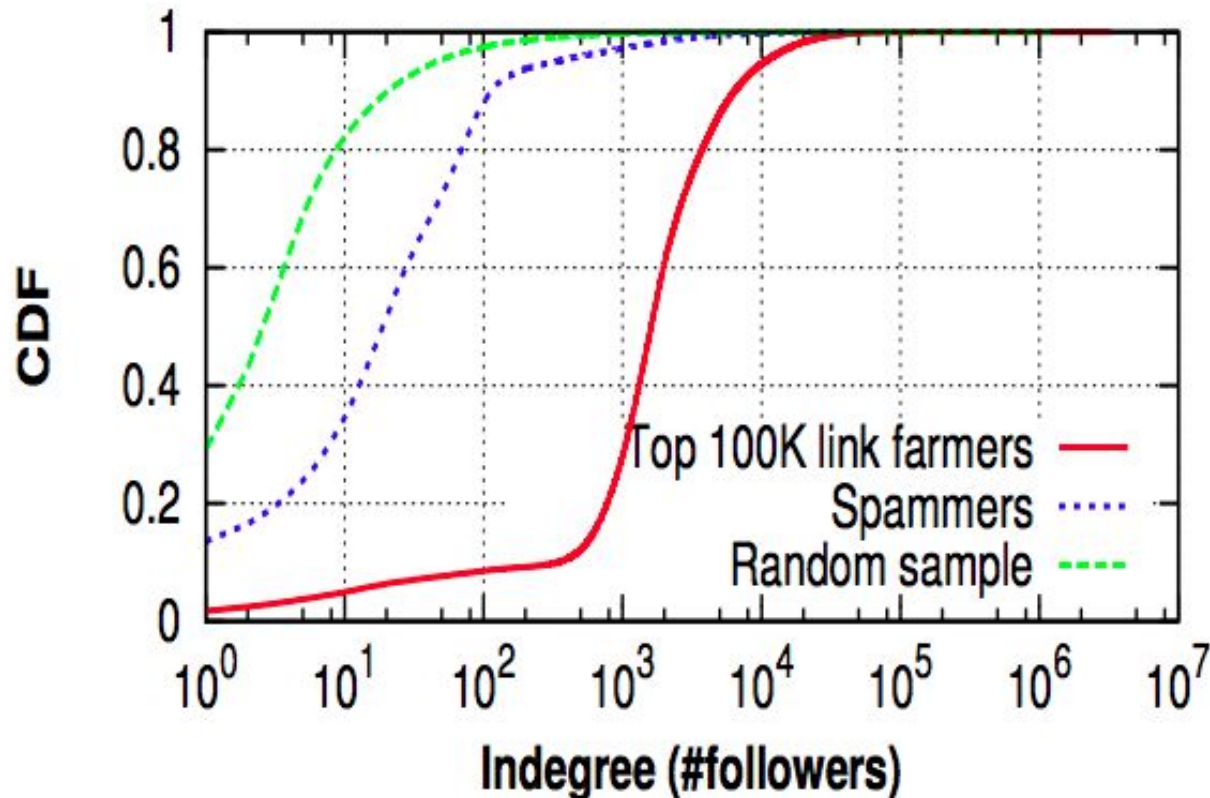
Top 5 link farmers according to	
#links to spammers	Pagerank
Larry Wentz: Internet, Affiliate Marketing	Barack Obama: Obama 2012 campaign staff
Judy Rey Wasserman: Artist, founder	Britney Spears: It's Britney
Chris Latko: Interested in tech. Will follow back	NPR Politics: Political coverage and conversation
Paul Merriwether: helping others, let's talk soon	UK Prime Minister: PM's office
Aaron Lee: Social Media Manager	JetBlue Airways: Follow us and let us help

Top link farmers are not spammers

- 100,000 link farmers
- 18,826 were suspended
- 4,768 were “not found”
- 76% still active
- 235 are verified
- Manually checked 100 random users (volunteers)
- 86 were real accounts
 - Business, internet marketing, ENT, money and social media

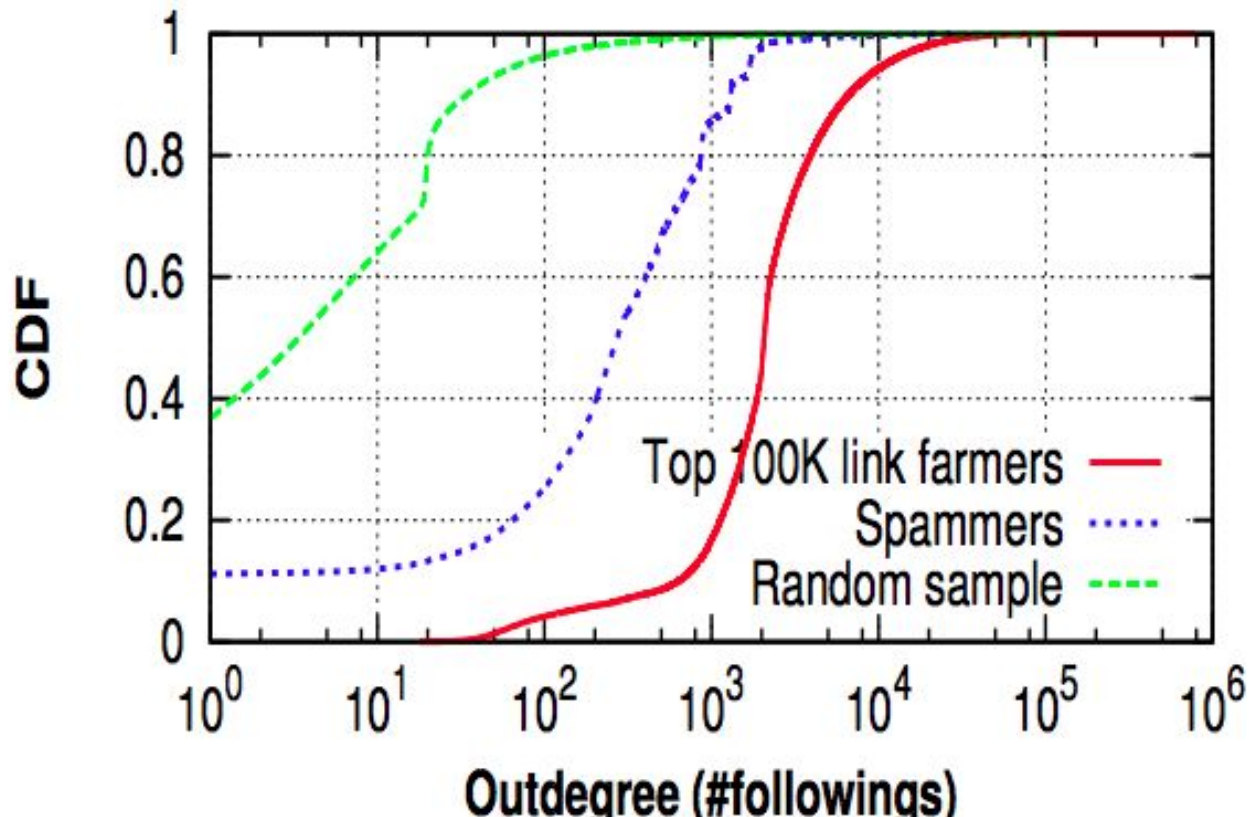
Node degree distribution: In

- Top link farmers have very high indegree compared to spammers and random sample



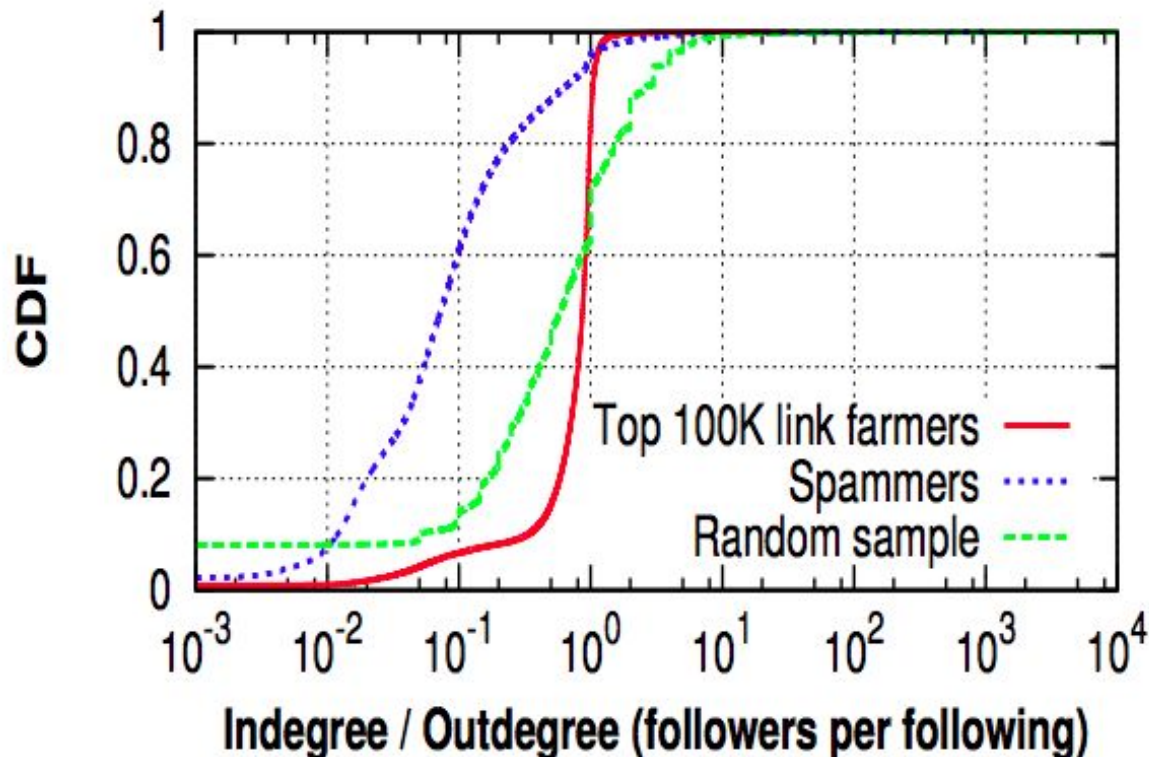
Node degree distribution: Out

- Top link farmers have very high outdegree compared to spammers and random sample



Node degree distribution: In/Out

- Most of the top link farmers have ratio near 1



Account bio of top 100,000 & random sample



Account bio of top 100,000 & random sample

- LF: promoting their own business or content or trends in a domain. Links to legitimate external sources
- RS: don't tweet to external sources



Conclusion

- Characteristics of links farmers
- Surprisingly, legitimate, popular, and highly active users such as bloggers, and experts mostly likely engage in link farming
- Increase social capital and influence



Thank you

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