Identifying Malicious Actors on Social Media

Srijan Kumar
Computer Science Dept.
University of Maryland
srijan@cs.umd.edu

Francesca Spezzano
Computer Science Dept.
Boise State University
spezzano@cs.boisestate.edu

V.S. Subrahmanian
Computer Science Dept.
University of Maryland
vs@cs.umd.edu

Abstract—Online social media platforms are severely compromised by the existence of malicious actors such as bots on Twitter, vandals on Wikipedia, fake accounts on Facebook, trolls on Twitter and Slashdot, and spammers who seem to be omnipresent. This tutorial presents methods to identify malicious actors in at least 4 settings: Twitter, Facebook, Slashdot, and Wikipedia. We will look at 4 broad categories of methods: (i) network based techniques where the structure of the social network is used, (ii) text based methods where the linguistic content of posts is examined, (iii) behavior-based methods which study actions of users, and (iv) real-time processes which enable defenders of social media to keep a step ahead of malicious actors. The tutorial will identify commonly used features for classifying actors into malicious vs. benign and will give a brief explanation of different algorithms both specific to social platforms and general algorithms that are platform neutral.

I. Background

An integral part of social network analysis and mining is to ensure the safety of the web. While benign users try to keep the web safe and usable, malicious users threaten the usability and safety of social networks. This tutorial focuses on detecting these malicious actors using state-of-the-art social network analysis, data mining and machine learning techniques.

This tutorial targets academic, industry and government researchers and practitioners with interests in social network anomaly detection, user behavior modeling, graph mining and ensuring social platform integrity. Newcomers to the area will learn the basics of these techniques. Experts in the area will learn in-depth techniques to detect malicious actors that are both social platform-specific techniques and platform-independent.

There are no prerequisites for attending the tutorial. The tutorial will cover basics as well as advanced topics of the above mentioned topics.

II. Presenters

Srijan Kumar is a Ph.D. student in the Computer Science department at the University of Maryland, College Park. He has been awarded several awards including Outstanding Graduate Student Deans Fellowship, WorldQuant Fellowship and Dr. Bidhan Chandra Roy Gold Medal. He completed his B.Tech. from Indian Institute of Technology, Kharagpur. His research focuses on malicious user and information identification. More details can be found at http://cs.umd.edu/~srijan/

Francesca Spezzano is an Assistant Professor at Boise State University in the Computer Science department. Before that, she was Postdoctoral Research Associate at the University of Maryland Institute for Advanced Computer Studies. She received her Ph.D. from University of Calabria in 2012. While a PhD student, she visited the Database Group at University of California Santa Cruz. Her research interests deal with identifying bad actors on social media, signed social networks, information diffusion, and national security. More details can be found at http://coen.boisestate.edu/faculty-staff/francescaspezzano/

V.S. Subrahmanian is a Professor in the Computer Science department, director of the Lab for Computational Cultural Dynamics and Director of the Center for Digital International Government at the University of Maryland, College Park. His work stands squarely at the intersection of big data analytics for increased security, policy, and business needs. He has published over 280 peer-reviewed papers. He led the team that won DARPA's Twitter Bot Challenge in early 2015. He currently serves on the boards of numerous journals including Science, ACM Transactions on Intelligent Systems & Technology, ACM Transactions on Computational Logic, and IEEE Transactions on Computational Social Systems. Moreover, he serves currently on the Research Advisory Board of Tata Consultancy Services and CosmosId, the Board of Directors of the Development Gateway and Sentimetrix, Inc. More details can be found at http://cs.umd.edu/~vs/