



KDD 2017

Halifax, Nova Scotia - Canada

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Tutorial: Data-Driven Approaches towards Malicious Behavior Modeling



Meng Jiang
University of Notre Dame



Srijan Kumar
Stanford University



Christos Faloutsos
Carnegie Mellon
University



V.S. Subrahmanian
University of Maryland,
College Park

<http://www.meng-jiang.com/tutorial-kdd17.html>

Acknowledgement



Outline

Introduction

Feature-based algorithms

Bots

Sockpuppets

Vandals

Hoaxes

Spectral-based algorithms

Visualization: “spokes”, “blocks”, “staircases”

Camouflage

Theoretical guarantee

Density-based algorithms

Ill-gotten Likes

Synchronized Behaviors

Advertising campaigns

Social spam

Conclusions and future directions

Feature based signs of malicious behavior to look out for

- **Activity:** malicious behavior is often done with “throwaway” and recent accounts
- **Temporal:** malicious users are often faster
- **Linguistic:** malicious users are often abusive and more opinionated
- **Network:** malicious users often collude and are densely connected to each other
- **Community feedback:** malicious users are harshly treated by other users, but regular negative feedback can be harmful

Summary of each section

ADD

Open Challenges

P1. Anonymity

What is the role of anonymity and the lack of single verified identity in antisocial behavior on the internet?

Open Challenges

P2. Early detection

How can antisocial behavior and disinformation be detected as early as possible?

What features can we use?
Can we skip semantic analysis and fact checking?

Open Challenges

P3. Adversarial setting

Bad users can actively change behavior in presence of new detection measures to avoid detection.

How do we deal with this?

Open Challenges

P4. Organized adversaries

How do we detect coordinated attacks on social media?

Open Challenges

P5. Multi-platform malicious behavior

How do antisocial entities behave across several platforms?

Datasets

- Wikipedia hoax dataset: www.cs.umd.edu/~srijan/hoax
- Wikipedia personal attack dataset:
https://figshare.com/projects/Wikipedia_Talk/16731
- Wikipedia vandals: www.cs.umd.edu/~srijan/vews/
- Wikipedia vandalism:
http://wikipapers.referata.com/wiki/List_of_vandalism_datasets
- TAMU Twitter honeypot dataset:
<http://infolab.tamu.edu/data/>
- Twitter synchronized malicious behavior data:
<http://www.meng-jiang.com/pubs/catchsync-kdd14/catchsync-kdd14-code-and-data.gz>
- Amazon, Yelp, TripAdvisor review datasets:
- <http://shebuti.com/collective-opinion-spam-detection/>
- <http://cs.unm.edu/~aminnich/trueview/>
- <https://www.cs.uic.edu/~liub/FBS/fake-reviews.html>
- <http://snap.stanford.edu/data/#reviews>



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