Muhammad Ahmad Bashir

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Education

College of Computer & Information Science, Northeastern University	Boston, USA
Ph.D. in Computer Science (Advisor: Christo Wilson)	2014 – Present
LUMS School of Science and Engineering	Lahore, Pakistan
B.S. in Computer Science	2008 – 2012

Research Interests

My research revolves around understanding the **security** and **privacy** implications of large-scale online systems. Currently, I am focused on studying the **online advertising** ecosystem on the web to understand how it impacts user privacy. My goal is to make the online advertising ecosystem more transparent to enable users make informed decisions regarding their personal information.

I am also interested in the research surrounding *Threat Exchange* data. I have previosuly worked on projects aimed at **limiting abuse** on online services such as Facebook and Twitter.

Publications

- **"Recommended For You": A First Look at Content Recommendation Networks**
  IMC 2016
- **Tracing Information Flows Between Ad Exchanges Using Retargeted Ads**
  USENIX Security 2016
- **Strength in Numbers: Robust Tamper Detection in Crowd Computations**
  COSN 2015 (Best Paper Award)
- **Preserving Privacy in Collaborative Business Process Composition**
  SECRYPT 2015 (Best Paper Award)
- **Towards Detecting Anomalous User Behavior in Online Social Networks**
  USENIX Security 2014

Work Experience

1. *Graduate Research Assistant* – (Northeastern University)	Sep 2014 – Present
2. *Security Engineering Intern* – (Facebook Inc.)	Summer 2016
3. *Research Intern* – (Max Planck Institute, SWS)	Oct 2012 – Aug 2014
4. *Research Assistant* – (LUMS-SSE)	Feb 2013– Jul 2013
5. *Research Assistant* – (LUMS-SSE)	Jun 2011– Sep 2011

Honors and Awards

1. *Best Paper Award* 2015
   Conference on Online Social Networks (COSN'15).
2. *Best Paper Award* 2015
   International Conference on Security and Cryptography (SECRYPT '15).
3. *Research Intern Fellowship* 2012
   Max Planck Institute for Software Systems (MPI-SWS).
4. *Winner, Ericsson – PTA Mobile Excellence Award* 2011
   Nationwide contest for designing innovative mobile applications that leverage mobile technology to empower society in education, energy and security domains.
5. *Winner, SOFTEC* 2011
   Nationwide software development competition.

Research Projects

Graph Analysis of Threat Exchange Data Sep 2016 – Present
   Advisor: Prof. Alina Opera
   - In this work, we combine open threat exchange data from various sources to gain more insights.
   - We augment the current data with additional data sources to detect new unknown *Indicators of Compromise* (IoCs).

A First Look At Content Recommendation Networks Feb 2016 – Aug 2016
   (IMC '16) – Advisor: Prof. Christo Wilson
   - We look at how content (ads and recommendations) is served by CRNS.
   - This study highlights the inconsistencies in how the content is served and calls for stronger regulations.

Uncovering Hidden Relationships Between Online Advertisers Sep 2014 – Aug 2016
   (USENIX Security '16) – Advisor: Prof. Christo Wilson
   - We detect information sharing relationships between ad networks using a generic technique involving retargeted ads.
   - This study detects 31% of cookie matching partners which were missed by previous detection methodologies.

Robust Tamper Detection in Crowd Computations Feb 2013 – Aug 2015
   (COSN '15) – Advisor: Prof. Krishna Gummadi
   - Detection of large-scale crowd computations which have been tampered with by a significant fraction of Sybils in Online Social Networks. E.g. 'Follower count' of a user on Twitter with a significant fraction of Sybil followers.
   - Designed and developed an online service 'TrulyFollowing' which discovers Twitter accounts with suspicious followers.
   - Worked with Twitter graph consisting of more than 300M users and Yelp dataset (San Francisco) consisting of roughly 30K businesses with 341K reviewers.

Detecting Anomalous User Behavior in Online Socail Networks May 2013 – Aug 2014
   (USENIX Security '14) – Advisor: Prof. Krishna Gummadi
   - Detection of anomalous identities on Facebook used in diverse attack strategies (Sybil, compromised or colluding network).
   - Applied this work on Facebook Ads to detect anomalous clicks.
   - Worked with public data (likes, timeline, friends etc.) of more than 50K Facebook identities.

Verifying Online Social Identities Oct 2012 – Jan 2013
   Advisor: Prof. Krishna Gummadi

- Verification of social identities by propagating trust through an initial set of assumed trusted accounts in Twitter.

Anonymization of Trajectory Dataset Apr 2012 – July 2013

Advisor: Prof. Basit Shafiq

- Used differential privacy to anonymize the trajectory dataset provided by Geolife – Microsoft Research Asia.

Poor Man's Reader May 2011 – Jun 2012

(Senior Year Thesis) – Advisor: Prof. Umar Saif

- Developed a system *P*oor Man's Reader, which takes in VGA quality mobile camera images of English texts and reads out its Urdu translation.
- This project won 2 national awards.

Teaching Experience

1. *Teaching Assistant:* CS 585: Service Oriented Computing Spring 2013
   Lahore University of Management Sciences (LUMS-SSE)
2. *Teaching Assistant:* CS 582: Distributed Systems Fall 2012
   Lahore University of Management Sciences (LUMS-SSE)
3. *Teaching Assistant:* CS 380: Databases Spring 2012
   Lahore University of Management Sciences (LUMS-SSE)

Technical Skills

Languagues: Python, Java, C, C++, Javascript, SQL, HTML, PHP
Tools: Weka, Spark, Matlab, BPEL
Platforms: Linux, Windows, Mac OS X

References

Available upon request