Md. Sadek Ferdous

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Research Interests

Identity Management, Trust Management, Information Retrieval, Mobile Security, Trusted Computing, Privacy Enhancement Technologies & Security Usability

Education

PhD in Computer Science — 2011 to present
School of Computing Science, University of Glasgow, UK
- Primary Supervisor: Dr. Ron Poet
- Secondary Supervisor: Dr. Gethin Norman
- Topic: User-controlled Identity Management Systems using Mobile Devices.
- Thesis submitted.

Master of Science in Security and Mobile Computing — 2007 to 2009
Norwegian University of Science and Technology (NTNU), Norway
- Supervisor: Professor Audun Jøsang, University of Oslo, Norway
- Thesis: Identity Management with Petname Systems.

Master of Science in Engineering (Computer Science) — 2007 to 2009
University of Tartu, Estonia
- Supervisor: Professor Audun Jøsang, University of Oslo, Norway
- Thesis: Identity Management with Petname Systems.

BSc. Eng. in Computer Science and Engineering — 1998 to 2004
Shah Jalal University of Science and Technology, Bangladesh
- Final Year Project: SMS Gateway Server for Multi-cellular Operators.

Employment History

Research Assistant — July 2014 to present
School of Computing Science, University of Glasgow, UK
- Responsible for conducting research and developing systems to collate a large collection of textual and multimedia data and to analyse them in a project called the Integrated Integrated Multimedia City Data (iMCD).
- Part of an ongoing ESRC funded Urban Big Data Centre, Glasgow.

Postgraduate Tutor — March 2011 to May 2014
School of Computing Science, University of Glasgow, UK
- Responsible for tutoring undergraduate and MSc. Students several subjects such as Java Programming, Object-oriented Software Engineering, Algorithm & Data Structure and Information Management.

Research Assistant — April 2010 to February 2011
School of Computing, University of Kent, UK
- Supervisor: Professor David Chadwick
- Responsible for conducting research and developing systems in a JISC Funded project called **Logins for Life**.

Assistant Professor — October 2009 to March 2010
Dept. of ICT, Metropolitan University, Bangladesh
- Responsible for lecturing undergraduate level courses on Computer Networking, Discrete Mathematics, Algorithms and Programming in C, taking exams and assessing homework assignments and grades.

Lecturer   May 2006 to August 2007

Dept. of ICT, Metropolitan University, Bangladesh

- Responsible for lecturing undergraduate level courses on Computer Networking, Discrete Mathematics, Algorithms and Programming in C, taking exams and assessing homework assignments and grades.

Lecturer   February 2005 to May 2006

Dept. of Information and Communication Engineering, Southeast University, Bangladesh

- Responsible for lecturing undergraduate level courses on Computer Networking, Assembly Language Programming and Data Structures, taking exams and assessing homework assignments and grades.

REFEREED JOURNAL PUBLICATIONS

[1] Ferdous, M.S. and Poet, R. Managing Dynamic Identity Federations using Security Assertion Markup Language (SAML). Accepted for publication in the *Journal of Theoretical and Applied Electronic Commerce Research*. 2014.

[2] Ferdous, M.S. and Poet, R. Analysing Power Consumption Of Different Browsers & Identity Management Systems In Mobile Phones. *Special Issue on Mobile Computing, International Journal of Distributed and Parallel Systems*. 3(2):21–41. 2012.

SUBMITTED JOURNAL PUBLICATIONS

[3] Ferdous, M.S. and Poet, R. A Hybrid Model of Attribute Aggregation using Security Assertion Markup Language (SAML). Submitted to the *Journal of Computer Security (JCS)*. 2015.

REFEREED BOOK CHAPTER

[4] Ferdous, M.S. and Jøsang, A. Entity Authentication & Trust Validation in PKI using Petname Systems. In Atilla Elçi et al. (editors), *Theory and Practice of Cryptography Solutions for Secure Information Systems (CRYPSIS)*. Published by IGI Global, May 2013. ISBN13: 9781466640306

SUBMITTED CONFERENCE PUBLICATIONS

[5] Ferdous, M.S., Norman, G., Jøsang, A. and Poet, R. Mathematical Modelling of Trust Issues in Federated Identity Management. Submitted to the *9th IFIP WG 11.11 International Conference on Trust Management (IFIPTM-15)*. 2015.

CONFERENCE PUBLICATIONS

[6] Ferdous, M. S. and Poet, R. CAFS: A Framework for Context-Aware Federated Services. In: *Proceedings of the 13th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom-14)*. Beijing, China, 24-26 September, 2014.

[7] Ferdous, M. S., Norman, G and Poet, R. Mathematical Modelling of Identity, Identity Management and Other Related Topics. In: *Proceedings of the 7th International Conference on Security of Information and Networks (SIN 2014)*. Glasgow, UK, 9-11 September, 2014.

[8] Ferdous, M. S. and Poet, R. Analysing Attribute Aggregation Models in Federated Identity Management. In: *Proceedings of the 6th International Conference on Security of Information and Networks (SIN-13)*. Aksaray, Turkey, 26-28 November 2013.

[9] Ferdous, M. S. and Poet, R. Portable Personal Identity Provider in Mobile Phones. In: *Proceedings of the 12th IEEE International Conference on Trust, Security and Privacy in Computing and Communications (TrustCom-13)*. Melbourne, Australia, 16-18 July 2013.

[10] Ferdous, M. S. and Poet, R. Dynamic Federation using Security Assertion Markup Language (SAML). In: *Proceedings of the 3rd IFIP WG 11.6 Working Conference on Policies & Research in Identity Management (IFIP IDMAN 2013).* London, UK, 8-9 April 2013.

[11] Ferdous, M. S. and Poet, R. A comparative analysis of Identity Management Systems. In: *Proceedings of the International Conference on High Performance Computing and Simulation (HPCS), 2012*, pages 454–461, July 2012.

[12] Ferdous, M. S., Chowdhury, M. J. M., Moniruzzaman, M. and Chowdhury, F. Identity Federations: A New Perspective for Bangladesh. In: *Proceedings of the International Conference on Informatics, Electronics & Vision (ICIEV).* 219-224, 2012.

[13] Chadwick, D. W., Inman, G. L., Siu, K. W. S. and Ferdous, M. S. Leveraging social networks to gain access to organisational resources. In: *Proceedings of the 7th ACM workshop on Digital identity management 2011 (DIM '11)).* 43-52, 2011.

[14] Moniruzzaman, M., Ferdous and Hossain, R. A study on privacy policy enforcement in access control models. In: *the proceedings of the 13 International Conference on Computer and Information Technology (ICCIT, 2010).* 352-357, 2010.

[15] Singh, K., Jøsang, A., Ferdous, M. S. and Borgaonkar, R. Spam filter optimality based on signal detection theory. In: *the Proceedings of the 2nd International Conference on Security of Information and Networks, SIN 2009*, Gazimagusa, North Cyprus, Oct. 6-10, 2009, pp: 219-224.

[16] Ferdous, M. S., Jøsang, A., Singh, K. and Borgaonkar, R. Security Usability of Petname Systems. In: *the Proceedings of the 14th Nordic Workshop on Secure IT systems (NordSec 2009)*, Oslo, Norway, October 2009. pp: 44-59

[17] Ferdous, M. S. and Chowdhury, F. Covert Channel Communication in RFID (Short Paper). In: *the proceedings of the First International Conference on Security of Information and Networks, (SIN 2007)*, pp-47-52. 2007.

[18] Ferdous, M. S., Chowdhury, F. and Acharjee, J. C. An Extended Approach to Enhance the Performance of the Current NAPT. In: *the proceedings of the IEEE International Conference on Information & Communication Technology, (ICICT, 2007)*, pp-315-318. 2007.

[19] Ferdous, M. S. and Chowdhury, F. Middleware Distributed Approach to Synchronous Detection of ARP Cache Poisoning. In: *the proceedings of the 1st Indian Conference on Computational Intelligence and Information Security, (ICCIIS, 07)*, pp-22-25. 2007.

[20] Ferdous, M. S., Chowdhury, F. and Moniruzzaman, M. A Taxonomy of Attack Methods on Peer-to-Peer Network. In: *In the proceedings of the 1st Indian Conference on Computational Intelligence and Information Security, (ICCIIS, 07)*, pp-132-138. 2007.

PAPERS IN PREPARATION

[21] Ferdous, M. S., Norman, G. and Poet, R. Mathematical Modelling of Mobile Identity Management.

[22] Ferdous, M. S. User-controlled Identity Management using Mobile Devices.

POSTERS

[23] Ferdous, M.S. and Poet, R. CAFS: A Framework for Context-Aware Federated Services. In: *the fifth annual Scottish Informatics and Computer Science Alliance (SICSA) PhD Conference*, 2013.

[24] Ferdous, M.S. and Poet, R. Portable Personal Identity Provider in Mobile Phones. In: *3rd Cyber Security Meetup, Glasgow*, 2013.

[25] Ferdous, M.S. and Poet, R. Analysing Power Consumption of Identity Management Systems in Mobile Phones. In: *the fourth annual Scottish Informatics and Computer Science Alliance (SICSA) PhD Conference*, 2012.

[26] Ferdous, M.S. and Poet, R. Identity Management using Mobile Devices. In: *the third annual Scottish Informatics and Computer Science Alliance (SICSA) PhD Conference*, 2011.

[27] Ferdous, M.S. and Gaur, S. A text free mobile phone contact book with social touch. Award winning poster in *the 13th Nordic Workshop on Secure IT-systems (NordSec, 2008)*, Copenhagen, Denmark, 2008.

PROFESSIONAL SERVICE

Journal
- Reviewer of the *Theory and Practice of Cryptography Solutions for Secure Information Systems (CRYPSIS)*. Editors: Atilla Elçi et al. Published by IGI Global, May 2013. ISBN13: 9781466640306
- Reviewer of the *International Journal of Network Security (IJNS)*.

Conference
- Program Co-Chair, the 6th International Conference on Security of Information and Networks (SIN'15), 2015.

- Local Arrangements Co-Chair, the 6th International Conference on Security of Information and Networks (SIN'14), 2014.

- PC Member (Poster Chair), the 6th International Conference on Security of Information and Networks (SIN'13), 2013.

- Organiser of the 1st SICSA Cyber Security Conference, 2013.

- PC Member of the 17th Nordic Conference on Secure IT Systems (NordSec 2012).

- Organiser of the workshop titled "Large Scale Experiments & Mod-elling" at the SICSA PhD Conference 2012.

PROJECTS

Integrated Integrated Multimedia City Data (iMCD):

Part of an ongoing ESRC funded Urban Big Data Centre, Glasgow to conduct research and develop systems for collating a large collection of textual and multimedia data from online news sources, microblogs, social sharing sites such as Youtube & flickr and wearable sensors such as life-loggers and GPS devices and then to analyse this data set to make sense.

Logins for Life:

This was a JISC Funded year-long project which investigated how different Authentication Systems can be integrated into the university system so that users can use their preferred authentication modes to manage the university account and access different restricted pages.

Identity Management with Petname Systems:

MasterŠs thesis in which I investigated the possibility and usability of applying Petname Systems for better Identity Management.

Attack on classic crypto-systems:

This project included a series of tasks in which I had to break some of the classic crypto-systems. I had to write programs for each of the task and a method explaining how I did it. Crypto-system that were included were: Substitution cipher, Vigenère cipher, Text autokey cipher, Ternary linear keystream generator, Broadcast and Common Modulus Attack on RSA, RSA Attack on smooth primes, RabinŠs Cryptosystem and ElGamal Cryptosystem with smooth prime.

Web Service Deployment:

In this group-based project we used the Protégé-OWL Editor to create the ontology on different MIB objects and Jena for building semantic web application. Then we used the Apache Axis and Apache Ant to deploy the webservice using POJO.

Treasure Hunt Game:

In this group-based project we developed a prototype for multiplayer treasure hunt game using ActorFrame framework of Java and Ramses, a service engineering modeling suite based on Eclipse.

Resource Allocation Service:

In this group-based project we implemented a prototype for load balanced and fault tolerant DHCP server which were replicated among several machines. There were test client which could ask for an IP address with a given lease time. We used the Jgroup, a dependable computing toolkit for group communication system in Java.

SMS Gateway Server for Multi-cellular Operators:

This was the formal final year project at the Bachelor level. At that time, users of different Cellular Operators of our country could not send SMS among them. I developed a unique SMS Gateway Server by which SMS interconnectivity among different Cellular Operators were possible. E-mail through SMS was also implemented an an extension of the project which was first of its kind in Bangladesh.

TECHNICAL
SKILLS

Programming Languages:

Java, C/C++, Go, PHP, JSP, Shell.

Web Technologies:

HTML, XHTML, JavaScript, CSS, DOM, XML, SAML, XACML, XSLT, XUL, XPCOM, OpenID, OAuth.

Major Software:

Node.js, Shibboleth, Apache, Apache Hadoop, Apache-Tomcat, Jetty, SimpleSAMLphp, Network Simulator (NS), Protégé, ProVerif, Net-SNMP, Subversion, GIT.

Databases:

MongoDB, MySQL.

Operating Systems:

Linux, Android, Windows.

HONOURS & AWARDS
- Recipient of the **Student Travel Grants** to present a paper at the **International Conference on High Performance Computing and Simulation (HPCS)**, 2012.
- Recipient of the **Scottish Informatics and Computer Science Alliance (SICSA) PhD Studentship** for the doctoral study.
- Joint-author of the **Award winning poster** "A text free mobile phone contact book with social touch" at the **13th Nordic Workshop on Secure IT-systems (NordSec, 2008)**, Copenhagen, Denmark.
- Recipient of the prestigious European Union funded **Erasmus Mundus Scholarship** for studying the **Master's in Security and Mobile Computing (NordSecMob)**.
- Awarded as the **Best teacher** of the Department of Information and Communication Engineering in Southeast University in the Fall Semester, 2006.
- **Stood 20th in the merit list among 250,000+** students in Secondary School Certificate examination and received **Prime Minister Award of Excellence** and **Govt. Scholarship**.

REFEREES   Available on request.