

Sami Zhioua

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RESEARCH INTEREST

Computer and Network Security, Anonymity Protocols, Ethical Hacking, Penetration Testing, Malware Analysis and Detection, IT Security.
Reinforcement Learning, Planning and Learning in uncertain environments, Java Programming Language Optimization.

EDUCATION

Laval University, Canada February 2008
Ph.D. in Computer Science
Dissertation: *Stoachastic Systems Divergence through Reinforcement Learning*
Advisor: Dr. Josée Desharnais
Co-advisor: Dr. François Laviolette
External 1 : Dr. Martha Kwiatkowska (Oxford University)
External 2 : Dr. Doina Precup (McGill University)

Laval University, Canada July 2003
M.Sc. in Computer Science, GPA 4.17/4.33

University of Tunis, Tunisia July 2000
Institut Supérieur de Gestion (ISG), Tunis
B.Sc. in Computer Science.

EXPERIENCE

King Fahd University of Petroleum and Minerals, Saudi Arabia
Assistant Professor September 2009 - ..

McGill University, Canada
Postdoctoral research and teaching fellow January 2008 - August 2009

Laval University, Canada
Course Lecturer
Research Assistant January 2005 - December 2007

Concordia University, Canada
Research Assistant July 2003 - October 2004

Oqba Ibn Nafee Preparatory School, UAE
Computer Science Instructor September 2000 - August 2001

TEACHING EXPERIENCE

Undergraduate Courses

- *ICS-444: Computer and Network Security (KFUPM)*
- *ICS-343 : Fundamentals of Computer Networks (KFUPM)*
- *ICS-202 : Data Structures (KFUPM)*
- *ICS-102 : Introduction to Computing I - Java I (KFUPM)*
- *ICS-201 : Introduction to Computing II - Java II (KFUPM)*
- *GLO-3004 : Formal Spec. and Software Verif. (Laval University, Canada)*
- *COMP-322 : Introduction to C++ (McGill University, Canada)*

Graduate Courses

- *SEC-511 : Principles of Information Assurance and Security (KFUPM)*
- *SEC-595 : Malware Analysis (KFUPM)*
- *SEC-536 : Web Application Security (KFUPM)*

Specialized Trainings

- *OC1107-105 : Ethical Hacking: The New Approach to Security (KFUPM)*
- *OC1107-106 : Penetration Testing (KFUPM)*
- *OC127-195 : Malware Analysis (KFUPM)*
- *OC1306-103 : Web Hacking and Security (KFUPM)*
- *OC1508-102 : Exploit Reverse-Engineering (KFUPM)*

THESIS SUPERVISION

Master Thesis. *Muhammad Aliyu Sulaiman. Attacking Anonymous Communication Networks Through Port Redirection.* Defended May 2012.

Master Thesis. *Taher Al-Shehari. Web Browsers Resistance to Traffic Analysis Attacks.* Defended November 2014.

Master Thesis. *Majdi Bin Salman. Fingerprinting Tor Protocol Network Traffic.* Defended December 2014.

Master Thesis. *Asem Ghaleb. SCADA Security Simulation Testbed Design and Implementation.* Defended December 2015.

BOOKS

Stochastic Systems Divergence through Reinforcement Learning.

S. Zhioua. Paperback, First Edition, ISBN: 978-3-8473-3971-7, February 2012, LAP Publishing.

A Dynamic Compiler for an Embedded Java Virtual Machine.

S. Zhioua. 96 pages, Paperback, First Edition, ISBN: 3639095065, October 2008, VDM Verlag.

Embedded Java Security: Security for Mobile Devices.

M. Debbabi, M. Saleh, C. Talhi, S. Zhioua. 270 pages, 38 illus., Hardcover, First Edition, ISBN: 978-1-84628-590-5 , November 2006, Springer Verlag.

**JOURNAL
PAPERS**

S. Zhioua. Analyzing anonymity attacks through noisy channels. *Information and Computation Journal*, Volume 244, Pages 76-112, Elsevier, October 2015.

S. Zhioua. The web browser factor in traffic analysis attacks. *Journal of Security and Communication Networks*. Volume 8, Issue 18, Pages 4227-4241. John Wiley & Sons, September 2015.

J. Desharnais, F. Laviolette, and S. Zhioua. Testing Probabilistic Equivalence through Reinforcement Learning. *Information and Computation Journal*, Volume 227, Pages 21-57, Elsevier, June 2013.

S. Zhioua. Tor Traffic Analysis using Hidden Markov Models. *Journal of Security and Communication Networks*, Volume 6, Issue 9, pages 1075-1086, John Wiley & Sons, September 2013.

H. Yahyaoui, S. Zhioua. Bootstrapping Trust of Web Services based on Trust Patterns and Hidden Markov Models. *International Journal of Knowledge and Information Systems*. Volume 37, Issue 2, Page 389-416, Springer, 2013.

M. Debbabi, M. Saleh, C. Talhi, and S. Zhioua. Security Evaluation of J2ME CLDC Embedded Java Platform. *Journal of Object Technology*, Vol 5, Nb 2, P 125-154, March-April 2006.

M. Debbabi, A. Gherbi, L. Ketari, C. Talhi, N. Tawbi, H. Yahyaoui, and S. Zhioua. E-Bunny: A Dynamic Compiler for Embedded Java Virtual Machines. *Journal of Object Technology*, Vol 4, Nb 1, P 83-108, January-February 2005.

**CONFERENCE
PAPERS**

S. Zhioua, A. Ben Jabeur, M. Langar and W. Ilahi. Detecting Malicious Sessions through Traffic Fingerprinting using Hidden Markov Models. 10th International Conference on Security and Privacy in Communication Networks. Sept 24-26, 2014, China.

S. Zhioua, M. Langar. Traffic Analysis of Web Browsers. Formal Methods in Security (FMS) @ Petri Nets 2014: 20-33.

S. Zhioua. The Middle East under Malware Attack: Dissecting Cyber Weapons. IEEE ICDCS Workshop on Network Forensics, Security and Privacy (NFSP 2013). Philadelphia, USA, July 8, 2013.

M. Sulaiman, S. Zhioua. Attacking Tor through Unpopular Ports. IEEE ICDCS Workshop on Network Forensics, Security and Privacy (NFSP 2013). Philadelphia, USA, July 8, 2013.

S. Zhioua. Anonymity Attacks on Mix Systems: A Formal Analysis. *13th Information Hiding Conference*, Prague, Czech Republic. *Lecture Notes in Computer Science 6958*, Pages 133-147. 2011.

H. Yahyaoui and S. Zhioua. Bootstrapping Trust of Web Services through Behavior Observation. In Proceedings of the *11th International Conference on Web Engineering (ICWE 2011)*, LNCS 6757, Pages 319-330, Paphos, Cyprus, June 2011.

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- S. Zhioua. A New Information Leakage Measure for Anonymity Protocols. *Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering*. Volume 50 (Security and Privacy in Communication Networks), Part 8, pages 398-414. Springer, 2010.
- S. Zhioua. A Geometric View of Mutual Information: Application to Anonymity Protocols. *In proceedings of the International Symposium on Information Theory and its Applications (ISITA)*. Pages 60-65. October, 2010.
- S. Zhioua, J. Desharnais, F. Laviolette, and D. Precup. Learning the Difference between Partially Observable Dynamical Systems. In *Lecture Notes in Artificial Intelligence* (Proceedings of the 20th European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases, ECML-PKDD), 2009.
- F. Laviolette, S. Zhioua. Testing Stochastic Processes through Reinforcement Learning. In *NIPS'06 Workshop on Testing of Deployable Learning and Decision Systems*, Kiri Wagstaff, Chris Drummond and Dragos Margineantu (Eds), 8 pages, 2006.
- J. Desharnais, F. Laviolette, and S. Zhioua. Testing Probabilistic Equivalence through Reinforcement Learning. In *Lecture Notes in Computer Science* (Proceedings of the 26th Conference on Foundations of Software Technology and Theoretical Computer Science), Vol 4337, P 236-247, Springer, 2006.
- J. Desharnais, F. Laviolette, K. Darsini Moturu, and S. Zhioua. Trace Equivalence Characterization through Reinforcement Learning. In *Advances in Artificial Intelligence* (Proceedings of the 19th Canadian Conference on Artificial Intelligence), Vol 4013, P 371-382, Springer, 2006.
- M. Debbabi, M. Saleh, C. Talhi, and S. Zhioua. Security Analysis of Mobile Java. In *Proceedings of the 16th International Conference on Database and Expert Systems Applications (DEXA 2005)*, P 231-235, IEEE Computer Society, 2005.
- M. Debbabi, M. Saleh, C. Talhi, and S. Zhioua. Java for Mobile Devices: A Security Study. In *Proceedings of the 21st Annual Computer Security Applications Conference (ACSAC 2005)*, P 235-244, IEEE Computer Society, 2005.
- M. Debbabi, A. Gherbi, L. Ketari, C. Talhi, H. Yahyaoui, and S. Zhioua. A Synergy between Efficient Interpretation and Fast Selective Dynamic Compilation for the Acceleration of Embedded Java Virtual Machines. In *Proceedings of the 3rd International Conference on the Principles and Practice of Programming in Java (ACM PPPJ'04)*, P 100-107, ACM Press, 2004.
- M. Debbabi, A. Gherbi, L. Ketari, C. Talhi, N. Tawbi, H. Yahyaoui, and S. Zhioua. E-Bunny: A Dynamic Compiler for Embedded Java Virtual Machines. In *Proceedings of the 3rd International Conference on the Principles and Practice of Programming in Java (ACM PPPJ'04)*, P 108-115, ACM Press, 2004.
- M. Debbabi, M. Erhioui, L. Ketari, N. Tawbi, H. Yahyaoui, and S. Zhioua. Method Call Acceleration in Java Virtual Machines. In *Lecture Notes in Computer Science* (Proceedings of the International Conference on Computational Science 2003), Vol 2659, P 750-759, Springer, 2003.

PATENTS

Method Call Acceleration in Java Virtual Machines.

M. Debbabi, N. Tawbi, S. Zhioua, M. Erhioui, L. Ketari, H. Yahyaoui.

Patent disclosure filed at:

- US Patent Office: US20020405266P 20020822.
- European Patent Office: EP1394675.
- Japan Patent Office: JP2004086869.
- Chinese Patent Office: CN1251076.

RESEARCH PROJECTS

National Science, Technology and Innovation Plan (NSTIP) Mar 2014 - Mar 2016
Industrial Control Systems (SCADA) Security.

Deanship of Scientific Research (KFUPM) April 2013 - April 2014
Fast-Track Research Grant FT121-011 Traffic Fingerprinting of Tor Anonymity System.

Deanship of Scientific Research (KFUPM) Jan 2012 - Jan 2013
Fast-Track Research Grant SF111-CCSE-17. Investigation of Two New Attacks on Tor Protocol.

Deanship of Scientific Research (KFUPM) Mar 2010 - Jan 2011
Junior Faculty Research Grant JF10007. Towards A new Approach to Analyze Anonymity Protocols.

Concordia University - Alcatel Canada May 2004 - December 2004
Security Analysis of Java Micro Edition (J2ME).

Laval University - Panasonic New York (PINTL) Jan 2002 - March 2003
Acceleration of Java Micro Edition (J2ME).

ATTENDED CONFERENCES

The 10th International Conference on Security and Privacy in Communication Networks (SecureComm14), Beijing, China. Sept 24-26, 2014.

BlackHat USA 2014, Las Vegas, USA. August 2-7, 2014

DefCon 2014, Las Vegas, USA. August 7-11, 2014

Privacy Enhancing Technologies (PETS) 2013, Indiana, USA. July 10-12, 2014

The International Workshop on Network Forensics, Security, and Privacy (NFSP 2013), Philadelphia, USA. July 8-9, 2013

The 13th Information Hiding Conference(IH), Prague, Czech Republic. May 18-20, 2011

The 6th International Conference on Security and Privacy in Communication Networks (SecureComm10), Singapore. Sept 7-9, 2010

The 26th International Conference on Machine Learning (ICML 2009), Montreal, Canada. June 14-17, 2009

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The 26th International Conference on Foundations of Software Technology and Theoretical Computer Science, Kolkata, India. December 13-15, 2006

The 19th Canadian AI 2006, Qubec City, Canada. June 7-9, 2006

The International Conference on Computational Science (ICCS) 2003, Melbourne, Australia. June 2-4, 2003

AWARDS

Merit posdoctoral scholarship from Quebec Government (FQRNT)
\$30,000 per year. 2008-2010

Merit Ph.D. scholarship from Quebec Government (FQRNT)
\$20,000 per year. 2005-2006

Merit Ph.D. scholarship form Tunisian Government
\$12,000 per year. 2003-2006

Merit scholarship form Laval University (Bourse de la fondation)
\$12,000 per year (declined for unallowed combination) 2005

Winner of the OCTAS competition.
Acceleration and security of wireless mobile Java platforms. 2006

COMMUNITY SERVICE

Chairman of the Computer Science Curriculum Committee Sept 2011 - Jan 2015
1. Leading a team of 12 faculty members in curriculum activities
2. Leading a major revision of the B.S. in Computer Science program according to the ACM/IEEE Standard

President of the Computer Science Graduate Students Association at Laval University (elected position) Oct 2005 - Oct 2006
1. Represents the graduate students in computer science (more than 100 students),
2. Defends their rights,
3. Organizes academic and social activities. October 2005 - October 2006

PERSONAL

Born on February 1st, 1978 in Tunisia. Currently living in Dhahran, Saudi Arabia.

Citizenship: Tunisia, Canada.

Foreign languages: Arabic (maternal), French (fluent), Italian (intermediate).