

MONTHER ALDWAIRI

Department of Network Engineering and Security
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OBJECTIVE

Seeking a challenging full-time position at leading edge organization as a software engineer or application developer, where I can contribute, grow, and effectively utilize my broad background and expertise in the areas of network security, pattern matching, cloud computing, computer architecture, parallel computing and/or programming.

SUMMARY AND HIGHLIGHTS

- **Research**
 - Published highly-cited papers in top journals and conferences.
 - Successfully finished projects in broad research areas including: network security, pattern matching, bioinformatics, parallel algorithms, application specific processors architecture and cloud computing.
 - Founder and director of the cyber security research group at JUST.
 - Sustained a successful research program despite scarce funding sources in Jordan.
 - Advised over 10 Master's students. There is no PhD Program at JUST.
 - Successfully collaborated with renowned researchers from different countries and institutions (IBM Almaden Research Center, UC Berkeley and Masaryk University).
- **Industry**
 - Designed and implemented hardware efficient pattern matching algorithm for intrusion detection systems.
 - Designed, developed and tested a network processor for optical burst switching networks that support Just-in-Time signaling protocol. Successfully deployed at ATDnet 2002.
 - Integrated TogetherSoft control center with IBM ClearCase and CVS.
 - Designed, developed and coded ARAMEX market system.
- **Administrative**
 - Vice-dean of the Faculty of Computer and Information Technology, JUST.
 - Assistant Dean for Student Affairs, JUST.
 - JUST cloud program technical leader and cloud administrator.
 - Organizing three conferences, and two national competitions.

TECHNICAL SKILLS

High-level languages	C (expert), C++, C# (proficient), Java and Visual Basic (prior experience)
Web programming	HTML, XML, VB.NET and ASP.NET (prior experience)
Scripting Languages	Perl, csh/tcsh (prior experience)
Assembly Languages	x86, MIPS, 68k, ARM and AVR (prior experience)
HDL	ASIC Design, ASIC verification, SystemC, Verilog, VHDL
Hardware	Cadence (Virtuoso, Spectre), Synopsys tools, Modelsim, Leonardo Spectrum, Simplicity Simplify, Altera Quartus, Xilinx ISE, HSPICE (prior experience)
Operating Systems	Windows, Solaris, UNIX and Linux
Cloud Computing	IBM Tivoli Service Automation Manager (TSAM), IBM Service Delivery Manager (ISDM), IBM Tivoli Monitoring (ITM), Tivoli Usage and Accounting Manager (TUAM), VMware vSphere Client (VIC)
Networks	Snort, PlanetLab, Wireshark
Reverse Engineering	OllyDbg, WinHex
Misc	MS Visual Studio, OllyDbg, CVS, AVR Studio, Avid Liquid, Cygwin

EDUCATION AND TRAINING

- **MS and Ph.D. in Computer Engineering** 2000 – 2006
 - University North Carolina State University, Raleigh, NC, USA
 - Advisor Advisor: Paul Franzon
 - Dissertation "Hardware Efficient Pattern Matching Algorithms and Architectures for Fast Intrusion Detection"
 - Committee Thomas Conte, Yannis Viniotis and George Rouskas.

Coursework	Digital ASIC Design ASIC Verification VLSI Design Design for Testability Electronic Packaging and Interconnect Design	Internet Protocols Network Measurements High Speed Networks Network Security E-Commerce Technology	Computer Architecture Parallel Processing Embedded Systems Design O-O Languages Technology Commercialization
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- **B.S. in Electrical Engineering (Specialty Area: Computer Engineering)** 1993 –1998
 University Jordan University of Science and Technology (JUST), Irbid, Jordan
 GPA /Rank Excellent (86.1%), 1st on Computer Engineering class of 1998
 Honors University President's and Engineering Dean's honor lists

▪ **Professional Training**

- TP210 Tivoli Provisioning Manager 7.2 Automation Package Development
- TM021 IBM Tivoli Monitoring Fundamentals
- TP310 Foundation Technologies for Cloud Service Delivery 7.2.2
- ZW044 IBM Tivoli Service Automation Manager 7.2.1.1
- IBM Cloudburst Administration and Operations Workshop
- IBM Academic Sandbox Administrator Workshop
- IBM Connections Social Business workshop
- CEH Ethical Hacking
- Statistical Analysis using SPSS
- Recent Teaching Methodologies

EXPERIENCE

▪ **Research Experience**

2009 -Present (Summer 2013)	Assistant Professor of Network Engineering and Security, JUST, Irbid, Jordan Erasmus Mundus Visiting Professor, Masaryk University, Brno, Czech Republic.
Fall 2012	Distinguished IBM Visiting Scholar, IBM Almaden Research Center, San Jose, CA
2007-2009	Assistant Professor of Computer Engineering, JUST, Irbid, Jordan
2006-2007	Post-Doctoral Research Associate, North Carolina State University, Raleigh, NC
2001-2006	Research Assistant, North Carolina State University, Raleigh, NC

▪ **Administrative and Industry Experience**

2010-2012	Vice Dean of Faculty of Computer and Information Technology, JUST, Irbid, Jordan
2008-2009	Assistant Dean for Student Affairs, JUST, Irbid, Jordan
Summer 2001	System Technology and Security Engineer (Intern), Together Soft/Borland Software Corp, Raleigh, NC
1998-2000	Technology Integration Engineer, ARAMEX International, Amman, Jordan

▪ **Teaching Experience**

2009 -Present	Assistant Professor of Network Engineering and Security, JUST, Irbid, Jordan
2009-Present	Adjunct Professor of Computer Engineering, New York Institute of Technology (NYiT), Amman, Jordan
2007-2009	Assistant Professor of Computer Engineering, JUST, Irbid, Jordan
2001-2003	Teaching Assistant, North Carolina State University, Raleigh, NC

CONTRACTS, GRANTS AND FUNDED PROJECTS

Contract research, fund and grants in Jordan are limited to state funding and are generally scarce.

1. PI, "Investigating the application of data mining prefetching based algorithm to improve the performance of hybrid storage systems", **IBM Shared University Research Grant, \$35,000**, July 2012.
2. **Distinguished IBM Visiting Scholar, IBM Almaden Research Center, \$35,000**, July 2012.
3. Steering Committee and fund raising for the 3rd International Conference on Information and Communication Systems (iCICS'12), **\$30,898**, Apr, 2012.
4. PI, "Accelerated H/W Wu-Manber for IDS", **JUST deanship of research, \$9,040**, Jan, 2012.
5. Co-PI, "FFN characterization and detection", **JUST deanship of research, \$20,622**, 2011.
6. PI, "justTV project", **International Media Support (IMS), Denmark, \$21,368**, Nov, 2011.
7. Steering Committee and fund raising for the 2nd International Conference on Information and Communication Systems (iCICS'11), **\$31,308**, May, 2011.
8. Steering/organizing Committee and fund raising 3rd National Technology Parade, **\$47,222**, May, 2010.
9. PI, Annual University-wide Career Fair, JUST, **\$17,580**, Apr, 2009.

Google Scholar public profile with citation count: <http://scholar.google.com/citations?user=YZeEjC0AAAAAJ&hl=en>
 LinkedIn: www.linkedin.com/pub/monther-aldwairi/1a/243/a31

a. Refereed Journal Articles:

1. **Monther Aldwairi**, Yaser Khamayseh, Mohamed Al-Masri, (2012), "Application of artificial bee colony for intrusion detection systems". Security Comm. Networks. <http://dx.doi.org/10.1002/sec.588>
2. **Monther Aldwairi**, Rami Alsaman, "MALURLS: A lightweight Malicious Website Classification Based on URL Features", Journal of Emerging Technologies in Web Intelligence (JETWI), Vol. 4, No. 2, pp.128-133, 2012.
3. Mazen Kharbutli, **Monther Aldwairi**, Abdullah Mughrabi, "Function and Data Parallelization of Wu-Manber Pattern Matching for Intrusion Detection Systems", Network Protocols and Algorithms, Vol. 4, No. 3, pp. 46–61, 2012.
4. **Monther Aldwairi**, Bashar Al-Hajasad, Yaser Khamayseh, "A Classifier System for Predicting RNA Secondary Structure", Accepted for publication in the International Journal of Bioinformatics Research and Applications, 2012.
5. **Monther Aldwairi**, Haitham Noman, "A Zero-day Attach Exploiting a Yahoo Messenger Vulnerability". International Journal of Scientific & Engineering Research, Vol. 3, No. 8, 2012.
6. **Monther Aldwairi**, Niveen Yaser, "Hybrid Pattern Matching Algorithm for Intrusion Detection Systems", Journal of Information Assurance and Security, Vol. 6, No. 6, pp.512–521, 2011.
7. **Monther Aldwairi**, Thomas Conte, Paul Franzon, "Configurable String Matching Hardware for Speeding up Intrusion Detection". In ACM SIGARCH Computer Architecture News, 33(1):99–107, 2005. **Cited by 101.**

b. Articles in Refereed Symposia, Conferences and Workshops

8. **Monther Aldwairi**, Yahya Flaifel, "Baeza-Yates and Navarro Approximate String Matching for Spam Filtering", In Proc. of the Second International Conference on Innovative Computing Technology (INTECH 2012), Rabat, Morocco, September 18-20, 2012.
9. **Monther Aldwairi**, Haitham Noman, "A Zero-day Attach Exploiting a Yahoo Messenger Vulnerability", In Proc. of the 2012 Global Conference for Academic Research (GCAR), Kuala Lumpur, Malaysia, Jun 8-11, 2012.
10. **Monther Aldwairi**, Duaa AL-ansari, "Exscind: Fast pattern matching for intrusion detection using exclusion and inclusion filters", 7th International Conference on Next Generation Web Services Practices (NWeSP), pp.24-30, 19-21 Oct. 2011. doi: 10.1109/NWeSP.2011.6088148
11. **Monther Aldwairi**, Rami Alsaman. "MALURLS: Malicious URLs Classification System". In Proc. of the Annual International Conference on Information Theory and Applications, Singapore, Feb 28, 2011. **Best Paper Award**
12. **Monther Aldwairi**, Noor Al-Tarazi. "IP Lookup Using Two-level Indexing and B-Trees". In the Proc. of the 2010 International Conference on Internet Computing (ICOMP'10), held in conjunction with the 2010 World Congress in Computer Science, Computer Engineering and Applied Computing. Las Vegas, July 12-15, 2010.
13. **Monther Aldwairi**, Rehab Duwairi, Wafa'a Alqarqaz. A Classification System for Predicting RNA Hairpin Loops. In Proc. of the 2009 International Joint Conference on Bioinformatics, Systems Biology and Intelligent Computing (IJCBS '09). IEEE Computer Society, Washington, DC, USA, 109-115.
14. Fatima Alharbi, **Monther Aldwairi**. "Optimizing Antenna Topology in 802.16j Networks Using Genetic Programming". In Proc. of Mosharaka International Conference on Communications, Propagation and Electronics (MIC-CPE) Amman, Jordan, 2009.
15. **Monther Aldwairi**, Thomas Conte, and Paul Franzon. Configurable String Matching Hardware for Speeding up Intrusion Detection. In Proc. of Workshop on architectural support for security and anti-virus (WASSA), held in conjunction with ASPLOS XI. Boston, MA, Oct 04.
16. **Monther Aldwairi**, Mohamed Guled, Mark Cassada, Mike Pratt, Daniel Stevenson, Paul Franzon. "Switch Architecture for Optical Burst Switching Networks". In Proc. of the first workshop on Optical Burst Switching, OPTICOMM. Dallas, Oct 03.

c. Journal Articles in Review

17. **Monther Aldwairi**, Yahya Flaifel, "Accurate Spam Filtering using Baeza-Yates and Navarro Approximate String Matching", International Journal of Enterprise Information Systems, Oct 2012.
18. **Monther Aldwairi**, Duaa AL-ansari, "Exscind: A New Filtering-based Pattern Matching For Intrusion Detection", IEEE Systems Journal, Aug, 2012.
19. Basheer Al-Duwairi, Ahmed Al-Hammouri, **Monther Aldwairi**, "GFlux: A Google-based System for Fast Flux Detection", Computer Networks, Elsevier, Jul, 2012.
20. **Monther Aldwairi**, Wail Mardini, Alaa Alhowaide," SCANS: Stop Character Automatic signature generation System", Journal of Ad Hoc Networks, Elsevier, Jul, 2012.
21. **Monther Aldwairi**, Khulood AL_Khamaiseh, "Exhaust: Optimizing Wu-Manber Pattern Matching for Intrusion Detection using Bloom Filters", Journal of Information Security Research, May 2012.

PROJECTS

a. Industry

1. Led NC State team to design an FPGA network processor for optical burst switching networks that support Just-in-Time signaling protocol (JIT). The project involved integrating multiple parts created by: FPGA by NC State (five design and verification engineers), PCB by MCNC (seven engineers) and interface by DAPRA. Final integrated box was successfully deployed in ATDnet, Washington DC. I was responsible for the overall FPGA design and integration as well as the IO buffers, packet parser, routing message engine, crossbar, arbiter, packets assembly and disassembly and CRC hardware modules. (Verilog, Altera FPGA, C++)
2. Wrote IBM ClearCase integration modules into TogetherSoft control center and crafted Perl scripts to integrate the control center with CVS. (C++, PERL)
3. Designed, developed and coded ARAMEX market system which is an intranet- fully fledged procurement system with approval chain. (ASP, IIS5, MS Visual Interdev, SQL).

b. Academia and Research

4. Designed and coded a modified Wu-Manber pattern matching algorithms with inclusion and exclusion bloom filters. The application matches 78 files of 70MB binary packet traces to a 10,000 Snort signatures in real-time
5. Designed, developed, tested and documented a two-pass assembler, microprocessor simulator, loader/linker and a macro processor for a hypothetical ISA set for teaching purposes.
6. Design, implementation and verification of a 10Gbps FPGA-based pattern matching accelerator for IDS. Created an application to parse Snort rules and output the state table for Aho-Corasick pattern matching algorithm. (Verilog, Altera FPGA, C++)
7. Online trading agent to enter class TAC competition (Java)
8. Cache system, branch predictor and instruction scheduler simulators (C)

AWARDS, RECOGNITIONS AND HONORS

Distinguished IBM Visiting Scholar, IBM Almaden Research Center	2012
Academic Staff JORdan and SYria Linking Europe and Erasmus Mundus (JOSYLEEM 1) mobility scholarship	2013
Inti7an.com and Scent inducing device, chosen to be funded startups by OASIS500	2012
Best Research Paper Award, The Annual International Conference on Information Theory and Applications.	2011
Graduate project "eVoucher" won the 3 rd National Technology Parade MoICT/JPC prize.	2010
Graduate project "AOCR" won the 1 st National Technology Parade OPTIMIZA prize in Jordan.	2008
Graduate Research Assistantship from North Carolina State University	2001-2006
Teaching Assistantship from North Carolina State University	2001-2003
MS and PhD scholarships from JUST	2000-2005
Ministry of Higher Education Fellowship	1993-1998

AFFILIATIONS

1. Institute of Electrical and Electronic Engineers (IEEE) 1996-present
2. Jordan Engineers Association 1999-present

VISA STATUS

Requires sponsorship

REFERENCES

Available Upon Request