AHMED BADI

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EDUCATION

Ph.D. Computer Engineering, Florida Atlantic University, Boca Raton, Florida (ABD).
Dissertation Title: Reliable, Energy-aware cross layer protocol for Wireless Sensor Networks

M.S. Computer Engineering, Florida Atlantic University, Boca Raton, Florida.
Thesis Title: "Analysis of Cache Coherence Protocols Using Petri Nets".

B.S. Electrical Engineering (Telecommunications), University of Khartoum.

ACADEMIC EXPERIENCE
August 2002 – Present

Instructor, Computer Science and Engineering Dept., Florida Atlantic University
Taught 'Foundation of Computer Science' course to computer science undergraduates. Developed the class notes, homework, quizzes, and exams for the course.

Teaching Assistant, Computer Science and Engineering Dept., Florida Atlantic University
Grader and teaching assistant for database, advanced C++ programming, Computer Architecture, Mobile Computing, introduction to VLSI, introduction to database structures, microprocessor programming, and logic design courses. Worked closely with students on their C++, database, and web programming assignments.

Lecture Presentations, Computer Science and Engineering Dept., Florida Atlantic Univ.
Invited to teach lectures on memory architecture to undergraduate students in 'Computer Architecture' course. Developed all the presentation material for the lecture.

Taught lectures on wireless sensor networks technology to graduate students in 'Mobile Computing' course. Introduced this new technology to the class, covered issues and challenges, and the various research efforts in the field. Developed all presentation material.

Research Assistant, Computer Science and Engineering Dept., Florida Atlantic University
Research assistant in the Computer Science and Engineering (CSE) department Secure Telecommunication Networks project. This is a Federal earmark research project funded through the US Department of Defense (DOD).

Worked closely with students working towards their master's degree in wireless sensor networks research and the JiST/SWANS discrete event simulator.

Reviewed several peer-review submissions since 2006 for conferences ranging from IEEE International Symposium on a World of Wireless, Mobile and Multimedia Networks, ICC conferences, to IEEE International Conference on Mobile Ad-hoc and Sensor Systems.

RESEARCH INTERESTS

Energy-aware routing in ad-hoc and wireless sensor networks. Cross-layer protocol design and optimization in wireless sensor networks. Large-scale wireless ad-hoc and sensor networks. Computer communication protocols. Parallel and distributed systems. Reliability and performance evaluation.

PUBLICATIONS

A. Badi, I. Mahgoub, M. Ilyas, "MAC Layer Dynamic Backoff Scheme for Message Delivery Reliability in Wireless Sensor Networks", Accepted for presentation in the IEEE 5th International Symposium on High Capacity Optical Networks & Enabling Technologies (HONET 2008), November 2008.

A. Badi, and I. Mahgoub, "Wireless Sensor Networks (WSNs): Optimization of the OSI Network Stack for Energy Efficiency", Book chapter, Encyclopedia of Wireless and Mobile Communications, CRC Press, December 2007.

M. Slavik, I. Mahgoub, A. Badi, "Dynamic Entity Distribution in Parallel Discrete Event Simulation", Proceedings of the 2008 Winter Simulation Conference (WSC 2008), 2008.

M. Slavik, I. Mahgoub, A. Badi, "Cross-Layer Design for Wireless Networks with Cognitive Controllers", Proceedings of the IEEE 7th Wireless Telecommunications Symposium (WTS 2008), 2008.

M. Slavik, I. Mahgoub, A. Badi, F. Sibai, "A Functional Component Based Framework for Cross-Layer Design", Proceedings of the 4th International Conference on Innovations in Information Technology (Innovations'07), pp. 372-376, 2007.

V. Tippanagoudar, I. Mahgoub, A. Badi, "Implementation of the Sensor-MAC Protocol for the JiST/SWANS Simulator", Proceedings of IEEE/ACS International Conference on Computer Systems and Applications (AICCSA '07), pp. 225-232, 2007.

T. Sutaria, I. Mahgoub, A. Humos, A. Badi, "Implementation of an Energy Model for JiST/SWANS Wireless Network Simulator", Proceedings of the 6th International Conference on Networking (ICN'07), pp.24, 2007.

A. Badi and I. Mahgoub, "A Petri Net Analysis of a Hybrid Cache Coherence Protocol For Cluster-based Multiprocessor Systems", Proceedings of the 6th International Conference on Telecommunication Systems Modeling and Analysis. Mar 1998. Nashville, Tennessee.

A. Badi, "Analysis of Cache Coherence Protocols Using Petri Nets", A master thesis submitted to the Department of Computer Science and Engineering, Florida Atlantic University. May 1997.

A.Badi and I.Mahgoub, "LEACH, TEEN, and APTEEN: Energy performance comparisons", under preparation, to be submitted to the IEEE Transactions on Mobile Computing Journal.

A.Badi and I.Mahgoub, "LEACH, TEEN, and APTEEN: Scalability performance comparisons", under preparation, to be submitted to WSNs conference.

PROFESSIONAL AFFILIATIONS

Institute of Electrical and Electronics Engineers (IEEE), member since 1994.
IEEE Computer Society, member since 1994.
Tau Beta Pi, National Engineering Honor Society, member since 1997.

COMPUTER SKILLS

Computer Languages
JAVA, C, C++, SQL & Oracle PL/SQL, C#.NET, VB.NET, Motorola 68000 Assembly language, HTML, XML, and DHTML.

Operating Systems
Windows (9x, XP, NT, 2000), UNIX, and Linux.

Development Tools
Qt GUI development, Stingray Objective toolkit, STL, XML, TCP/IP protocols Network programming, MS COM/ DCOM, ATL, .Net, Java Swing, DOM and SAX parsers, RegEx pattern programming, Delphi, Java script and Visual Basic web Scripting, UNIX Shell Programming.

PROFESSIONAL EXPERIENCE
February 1997 - October 2003

Software Engineer*, SmartMD, formally DeScribe, Inc., Fort Lauderdale, Florida*
Gathered business requirements and created detailed design documents for the upgrades needed for the company's intranet site. Developed Windows services in C#.NET with MS SQL Server database backend. Upgraded an internal 'Intranet' web pages from ASP to ASP.NET. Created and added new database tables, database triggers, and stored procedures.

Software Engineer*, IBM, Boca Raton, Florida*
VC++, COM, MFC and API development for 'Ink Manager' software for IBM ThinkPad® Notebook computers. Implemented GUI Specifications and design changes using Stingray toolkit and MFC. Wrote wrapper functions for COM interfaces for device driver APIs and ink SDK. Using

the Standard Template Library (STL) and MFC, wrote classes to implement new functional requirements.

Software Developer, *Dynamic Imaging Corporation, Sunrise, Florida*
Developed VC++ class interfaces for Optical Character Recognition (OCR) and Optical Mark Recognition (OMR) SDKs and APIs. Developed applications using the *RegEx* (Regular Expressions) library to validate the OCR engine's output. Developed message parsers using the SAX parser for system-wide workflow XML messaging architecture.

Software Developer, *Workforce Solutions, formally Applied Automation Techniques, Miami, Florida*
Implemented design changes to support new features and functionality. Debugged and fixed client server (back-end) and DCOM defects reported by QA and customers.

Software Developer, System Administrator, *Zoran Corporation, formally Oak Technology, Boca Raton, Florida*
Responsible for the maintenance and updates of company-wide software build files and Installation Module software. Designed and developed an automated test script to test the software modules using Microsoft Visual Test. Designed and developed Installation scripts using *InstallShield®*. Developed Intranet HTML web pages.

REFERENCES
AVAILABLE UPON REQUEST.
US CITIZEN.