Mohammed .I. Alghamdi

Department of Computer Sciences

New Mexico Institute of Mining and Technology, Socorro, New Mexico

801 Lorry Pl#2062., Socorro, NM, 87801, USA

Web page: *http://www.nmt.edu/~alghamdi* E-mail: *alghamdi@nmt.edu*

• EDUCATION:

Ph.D: "CS" Computer Science Department of New Mexico Institute of Mining and Technology, Socorro~ present

***Dissertation*: Energy-Efficient Packet Transmissions in Real-Time Wireless Networks. CGPA (3.72)**

M.S: "IT" InformationTechnology Management Department Colorado Technical University, Denver, Colorado, 2003

***Thesis*: Risk and quality management in Planning. GPA (4.00)**

M.S: "CS" Computer Science Department, Colorado Technical University, Denver, Colorado, 2002

***Thesis*: "C O R B A" develops some parts for CORBA. GPA (3.88)**

March 22, 2003 Graduate Certificate in Software development.
March 22, 2003 Graduate Certificate in Computer System Architecture.
June 21, 2003 Graduate Certificate in System Engineering.
September 21, 2003 Graduate Certificate in Project Management.
September 21, 2003 Graduate Certificate in Technology Management.

B.S: Computer Science Department King Saud University, Riyadh, Saudi Arabia; July 1997.

***Senior Project*: Interfacing Access Database on the Web.**

• EXPERIENCE:

Jun 07~ present I am currently working with Dr. Andrew Sung as Academic Advisor.
Apr 05~present I am currently working with Dr. Xin Qin as Research Assistant
Aug 04-Apr 2005 I worked with Dr. Hamdy Soliman as Research Assistant.
Sep 03-Dec 2003 I worked with World Bank in Washington D.C as internship.
Sep 01-Sep 2003 I worked with Dr. Deborah as Research Assistant, I did some research for "IT" Information Technology:

1- Project Management Process in Organization.
2- Project Planning Exec & Closure.
3- Risk and Quality Management in Planning.
4- Schedule & Cost Contract Techniques.
5- Applied Managerial Marketing.
6- Contract & ProComm Project Management.
7- Relation Dabs Base Management System.

June 1998-Dec 2000 Special project division to provided technical support in the design and Implementation of mainframe publishing system. Developed function specification for interfacing with Mainframe and PC LAN system. Performed technical reviews and evaluation to Ensure efficient and evolution to ensure and effective operation.

Apr 1990-Dec 1997 Computer technical support, Al Alamiah Company, Inter project division in:

1-Majlis Ash'shura.
2-General presidency for Youth Welfare.
3-Ministry of Justice in Kingdom of Saudi Arabia.
4-Ministry of Defense in Kingdom of Saudi Arabia.
5- Ministry of Interior in Kingdom of Saudi Arabia.
6- Ministry of Education in Kingdom of Saudi Arabia.
7- King Abdul-Aziz City For Science and Technology.
8- "ARAMCO" Saudi Arabian Oil Company produces.
9-Ministry of Foreign Affairs in Kingdom of Saudi Arabia.
10- King Abdul-Aziz Foundation For Research and Archives.
11- Ministry of Higher Education in Kingdom of Saudi Arabia.
12- Ministry of Commerce & Industry in Kingdom of Saudi Arabia.

- **Provided:**

1- Sells Computers & programs.
2- Research and give solution & programs.
3- Planning for new generation Implementation.
4- Approach makes advances to new Technology.
5- Course study & Group leader, student teaching.
6-Training for the Computer Systems, Networking.

• RESEARCH INTERESTING:

1- Embedded Systems.
2- Real-Time Computing.
3- Performance Evaluation.
4- Power-Aware scheduling.
5- Security-Aware wireless networks.
7- Real-time applications in wireless networks
6- Wireless Networking, Security-Aware Energy- Efficient.
8- Real-Time Scheduling, Energy –Efficient wireless networks.

• DISSERTATION ABSTRACT:

Reducing energy consumption has become a major goal in designing modern real-time wireless networks. The focus of this study is to investigate the power and real-time issues in wireless networks. The study aims to develop a rich variety of scheduling schemes to reduce energy dissipation while meeting timing constraints of real-time applications in wireless networks. In what follows, I describe my solutions to the energy problem in the context of real-time wireless networks. In this work I addressed the issue of scheduling real-time messages in wireless networks subject to:

- Timing and power constraints.
- Extended a power consumption model to calculate power consumption rates in accordance to message transmission rates.
- Developed a novel energy-aware message scheduling scheme, or PARM (Power-aware Real-time Message), which generates optimal schedules minimizing both power consumption and the probability of missing deadlines for real-time messages.
- Experimental results show that PARM significantly improves the performance in terms of missed rate, energy efficiency, and overall performance over four baseline message scheduling schemes.
- Transmitting information with minimum energy, rather than at the fastest rate, which has been the focus of classical channel coding. This problem is especially interesting and important in the case of pocketsize data, which has not been well understood since previous research on transmission power control usually addressed continuous data. I develop novel scheduling algorithms for energy-efficient packet transmission with certain delay guarantees.
- Minimize energy consumption and the probability of missing deadlines for real-time packet.
- Algorithm aims to minimize transmission energy of a set of periodic packets without missing deadlines, To achieve this goal, the propose scheme reduces power levels for periodic packets in a judicious way that the lowered power levels can Efficiently lead to energy saving in the wireless link.

• OBJECTIVE:

1-Schedule packets with deadlines.
2-Delayed and rescheduled to escape errors.
3-Avoid temper of packet “no interrupt, save data”.
4-Deliver it to the desired destination “correct way”.
5-Minimize the delay incurred by real-time packets “save time".
6-Investigate the power and real-time issues in wireless networks.
7-Develop a rich variety of scheduling schemes to reduce energy.

• Awards and Honors:

• Awards from *Royal Embassy “Cultural Mission” of Saudi Arabia* in the U.S:

1. Excellence in Publication Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S.A, October 2007.
2. Summer Student Award, Ministry of Higher Education ”Cultural Mission” of Saudi Arabia, Aug 2007.
3. Excellence in Education Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., 2006-2007.
4. Excellence in Publication Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., May 2007.
5. Spring Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, May 2006.
6. Excellence in Publication Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., March 2007.
7. Excellence in Publication Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., Oct. 2006.
8. Fall Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Dec 2006.
9. Summer Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Aug. 2006.
10. Spring Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, May 2006.
11. Excellence in Publication Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., Oct. 2005.
12. Excellence in Education Award, Royal Embassy “Cultural Mission” of Saudi Arabia in the U.S., 2005.
13. Thanks from Dr. JAMIL A. MAKADMI “Ph.D advisor”.
14. **Speech Thanks from Prince Bandar bin Sultan, Ambassador of Saudi Arabia in Washington D.C, U.S.A 2005**
15. Fall Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Dec 2003.
16. Summer Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Aug 2003.
17. Spring Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, May 2003.
18. Fall Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Dec 2002.
19. Summer Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, Aug 2002.
20. Speech Thanks from Dr. AMIN H. ZAINELABDIN “Master advisor”.
21. Spring Student Award, Ministry of Higher Education “Cultural Mission” of Saudi Arabia, May 2002.

• Awards from *Colorado Technical University*, U.S.A:

22. Outstanding Graduate Student Service Award, 2002-2003.
23. Chancellor's Student Award 2003.
24. Chancellor's Student Award, 2002.
25. Speech Thanks from Dr. Mark A. Pieffer "Master advisor-Information Technology".
26. Speech Thanks from Dr. Deborah M. Telfer "Master advisor-Computer Science".

• Awards from *New Mexico Institute of Mining and Technology*, U.S.A :

27- New Mexico Tech 2007 Summer Graduate Student Travel Grant May 2007.
28- New Mexico Tech 2007 Fall Graduate Student Travel Grant September 2007.
29- New Mexico Tech 2007 Spring Graduate Student Travel Grant February 2008.

• *Other* Awards:

30- Speech Thanks from Saudi Student Club in Denver, U.S.A, Dec 2004.
31- Award from Marketing Information Technology magazine, 2004
http://www.alriyadh.com.sa/Contents/17-11-2004/RiyadhNet/News_4200.php
32- Speech Thanks from Prince Moqren bin Abdul-Aziz, Prince of Hail Area Sep 1999.

• *PUBLICATIONS:*

• Journal Publications:

1- Conserving Energy in Real-Time Wireless Networks via Message Scheduling.
IEEE Transactions on Wireless Communications. "under process"

2- Improving Security of Real-Time Wireless Networks Through Packet Scheduling.
*X. Qin, **Mohammed .I. Alghamdi**, M. Nijim, Z.-L. Zong, X.-J. Ruan, K. Bellam, and A. A. Manzanares, IEEE Transactions on Wireless Communications; "Accepted October 2007"*

3- Probabilistic Performance Guarantee for Energy-Aware Real-Time Wireless Networks.
IEEE Transactions on Mobile Computing. "under process".

4- Power-Aware Message Scheduling for Multimedia Wireless Networks.
ACM Transactions on Multimedia Computing Communications, and Applications "under process"

• Conference Publications:

5- PARM: A Power-Aware Message Scheduling Algorithm for Real-Time Wireless Networks. "Accepted"
***Mohammed .I. Alghamdi**, T. Xie, X. Qin, ACM Int'l Symp. Modeling, Analysis and Simulation of Wireless and Mobile Sys. (MSWiM), Workshop Wireless Multimedia Networking and Performance Modeling, Oct. 2005.*

6- AWARDS: An Adaptive Write Scheme for Secure Local Disk Systems. "Accepted"
*M. Nijim, X. Qin, T. Xie, and **Mohammed .I. Alghamdi**, Proc. 25th IEEE Int'l Performance Computing and Communications Conference (IPCCC), April 2006.*

7- HAGEES: A High Availability Guaranteed Energy-Efficient Scheduling Strategy for High-Performance Clusters.
*Z.-L. Zong, M. Nijim, **Mohammed .I. Alghamdi**, and X. Qin, Proc. the 7th Symposium of the Los Alamos Computer Science Institute, Santa Fe, NM, Oct. 2006. "Accepted"*

8- Scheduling of Periodic Packets in Energy-Aware Wireless Networks. "Accepted"
*X. Qin, **Mohammed .I. Alghamdi**, M. Nijim, Z.-L. Zong, and K. Bellam, Proc. the 26th IEEE Int'l Performance Computing and Communications Conf. (IPCCC'07), New Orleans, Louisiana, April 2007.*

9- Integrating Fault Recovery and Quality of Security in Real-time Systems. "Accepted"
*K. Bellam, Z. Zong, **Mohammed .I. Alghamdi**, M. Nijim, and X. Qin, Proc. IEEE International Symposium on Ubisafe Computing, Ontario, Canada, May 2007.*

10- Design and Performance Analysis of Energy-Efficient Parallel Storage Systems. "Accepted"
*Z.-L. Zong, M.E. Briggs, N.W. O'Connor, X. Qin, **Mohammed .I. Alghamdi**, and Y.-M. Yang, the Commodity Cluster Symposium 2007 (CCS2007), Annapolis, Maryland, July 2007.*

11- Energy-Efficient Scheduling for Parallel Applications Running on Heterogeneous Clusters. "Accepted"
*Z.-L. Zong, X. Qin, M. Nijim, X.-J. Ruan, K. Bellam, and **Mohammed .I. Alghamdi**, Proc. 36th International Conference on Parallel Processing (ICPP), Sept. 2007.*

12- Design and Implementation of Energy-Efficient Message Scheduling for Multilevel Security Wireless Networks. *"under process"*

13- CECA: An Energy-Efficient Scheduling in Parallel Heterogeneous Computing Environments. *"under process"*

14- Security-Aware Packet Scheduling in Real-Time Wireless Networks. *"under process"*

15- Improving Security of Real-time Systems with Non uniform Distribution of Checkpoints. *"under process"*

16- A Dynamic Voltage Scaling Algorithm for Parallel Applications on Clusters. *"under process"*

17- Information Security for Packet Scheduling in Real-Time Wireless Networks. *"under process"*

• MEMBERSHIP:

1- April 2005~ present Member **ACM** and **IEEE**.
2- Jan 1995~ present **"SCS"** Saudi Computer Society.
3- September 2002~ present **"NW"** Network World.
4- Jan 1992- July 1997 **"KSU"** King Saud University Computer Science Department.
5- 2001- 2003 **"CTU"** Colorado Technical University Computer Science.
6- Jan 2004- August 2004 **"CSU"** Colorado State University Computer Science Department.
7- August 2004~ present **"NMT"** New Mexico Institute of Mining and Technology Computer Science Department.
8- Jan 2006-May 2006 **"UNM"** University of New Mexico Computer Science Department.
9- Jan 2007- May 2007 **"NMSU"** New Mexico State University Computer Science Department.
10- Jan 1998-~ present **King Abdul-Aziz City for Science and Technology as a research.**
11- Jan 1998 ~ present **King Abdul-Aziz Foundation for Research and Archives as a research**.
12- 2005~ present **"CRA"** Computing Research Association.
13- 2004~ present **IEEE Computer Society student**.
14- 2006~ present **"AAAEA"** Arab American Association of Engineers & Architects.
15- 2006~ present **"CSSS"** Computer Science Students' Society.
16- 2007~ present **"CSSA"** Computer Science Student Association.
17- 2007~ present **"EATCS"** European Association for Theoretical Computer Science.
18- 2007~ present **"CSES"** Computer Science and Engineering Society.
19- 2007~ present **"UKCRC"** United Kingdom Computing Research Committee.
20- 2007~ present "**IS**" Internet Society.

• RECENT PROFESSIONAL:

1- Referee for "***Coexistence Study of A Wireless Sensor Network Utilizing IEEE 802.11 & IEEE 802.15.4 with Tiny OS***".
2- Referee for "***Operation of an SLA-aware Grid Fabric",*** Journal of Computer Science.
3- Referee for "***Automata-Theoretic Performance Analysis Method of Soft Real-Time Systems***", The First IFIP Workshop on Trusted and Autonomic Ubiquitous and Embedded Systems (TAUES05) within EUC' 2005, Nagasaki, Japan.
5- Invitation to **AINA-2007** Conference **(Advanced Information Networking and Applications** (AINA The IEEE 21st International Conference on Niagara Falls, Canada, May 21 AINA-07) 21-23, 2007**).**
6-Invitation to **ICPP-2007** Conference and Workshops **(**The 2007 International Conference on Parallel Processing (ICPP 2007) and 8 workshops in Xi'an, China, September 10-14, 2007.
7- Invitation to **MSWiM -2005** Conference and Workshops **(Modeling, Analysis and Simulation of Wireless and Mobile System, and Workshop Wireless Multimedia Networking and Performance Modeling, Oct. 2005**).

• SKILLS's:

• TECHNICAL SKILLS:

1- Programming Languages: C/C++, JAVA, and Matlab.
2- Platform: UNIX, LINUX, Windows, Macintosh.
3- Computer networks and Communications.
4- Networking Protocols: RTP, TCP/IP, LAN/WAN.

• MANAGEMENT SKILLS:

1-Risk Management.
2-Marketing.
3-Process Management.
4-Recourse Management.

• REFERENCE:

1- Dr. Andrew Sung
Professor
The Department of Computer Science, Chair, Cramer 230B
New Mexico Institute of Mining and Technology, Socorro, NM 87801, USA
E-mail: sung@cs.nmt.edu, URL: http://www.cs.nmt.edu/~sung
OFFICE: (505)835-5949, FAX: (505)835-5587