

AHMAD TAWFIQ AL-HAMMOURI

Department of Computer Engineering
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EDUCATION

- ◆ **Case Western Reserve University (CWRU)**—Cleveland, Ohio, USA
Ph.D. in Computer Engineering, January 2008
 - ◆ Dissertation Title: *Internet Congestion Control: Complete Stability Region for PI AQM and Bandwidth Allocation in Networked Control*
 - ◆ Advisor: Prof. Vincenzo Liberatore
- ◆ **Case Western Reserve University (CWRU)**—Cleveland, Ohio, USA
M.S. in Computer Engineering, January 2004
 - ◆ Thesis Title: *A Distributed Framework to Facilitate Human-Robot Remote Interaction*
 - ◆ Advisor: Prof. Vincenzo Liberatore
- ◆ **Jordan University of Science and Technology (JUST)**—Irbid, Jordan
B.S. in Electrical Engineering, June 2000
 - ◆ Majored in Computer Engineering

RESEARCH INTERESTS

- ◆ **Broad area of research:** Computer communication networks and distributed systems with emphasis on the intersection of networks and control theory
- ◆ **Particular subjects include**
 - ◆ Cyber-Physical Systems (also known as Networked Control Systems)
 - ◆ Congestion control
 - ◆ Middleware for real-time applications

PROFESSIONAL EXPERIENCE

- ◆ **Computer Engineering Department, Jordan University of Science and Technology**—Irbid, Jordan
Assistant Professor: February 2008 –
 - ◆ Undergraduate teaching in computer engineering and science
- ◆ **Network Lab, Case Western Reserve University**—Cleveland, OH, USA
Research Assistant: September 2002 – December 2007
 - ◆ Designed and developed a distributed, multi-agent framework to facilitate remote interaction with intelligent systems, e.g. robots
 - ◆ Identified design foundations of a test-bed for networked control systems
 - ◆ Proposed, designed, modeled, and evaluated a congestion control algorithm for cyber-physical systems (or networked control systems)
 - ◆ Derived theoretical results for the Proportional-Integral (PI) Active Queue Management (AQM) with TCP
 - ◆ Implemented a co-simulation platform for cyber-physical systems by integrating the Modelica framework and ns-2

◆ **Department of Electrical Engineering and Computer Science, Case Western Reserve University—**
Cleveland, OH, USA

Teaching Assistant: September 2001 – December 2007

- ◆ Taught recitation sections; covered classes; held office hours; and graded homeworks, quizzes and exams
- ◆ **Courses:**
 - VLSI/CAD (EECS 318) Fall 2001
 - Computer Architecture (EECS 314) Spring 2002
 - VLSI Systems (EECS 485) Fall 2003
 - Digital Systems Design (EECS 315) Spring 2004
 - Logic Design and Computer Organization (EECS 281) Fall 2004
 - Computer Communication Networks II (EECS 428) Spring 2006

◆ **USRA/NASA Glenn Research Center—**Cleveland, OH, USA

Student Research Assistant: June 2003 – July 2003

- ◆ Designed and developed a web site for the Polymer Molecular Devices Lab

◆ **Law School, Case Western Reserve University—**Cleveland, OH, USA

Computer Support Technician: May 2003 – August 2003

- ◆ Troubleshooted operating system, software, hardware and network problems for PC users
- ◆ Documented and logged help desk requests via Track-it@software

◆ **Department of Computer Engineering, JUST—**Irbid, Jordan

Teaching Assistant: July 2000 – August 2001

- ◆ Managed and supervised Labs; taught recitation sections; held office hours; and graded homeworks and quizzes
- ◆ **Courses and Labs:**
 - Microprocessor and Interfacing
 - Digital Logic
 - Data Structure
 - Computer Architecture
 - Computer Organization and Design

AWARDS AND HONORS

- ◆ USENIX Association Student Travel Stipend Award June 2005
- ◆ Full scholarship from JUST to pursue graduate studies August 2001 – August 2006
- ◆ Graduated at the top of class among 107 students, JUST June 2000
- ◆ Dean's Honor List eight of ten semesters, JUST September 1995 – June 2000

PROFESSIONAL SERVICE

- ◆ **Conference Session Chair:**
 - ◆ Northeast Ohio Networking Workshop (NEONet 06), Cleveland, OH, USA March 2006
- ◆ **Peer Review:**
 - ◆ **Journal Articles:**
 - IEEE Transactions on Control Systems Technology
 - International Journal of Systems Science
 - ◆ **Conference Articles:**
 - IEEE/RSJ International Conference on Intelligent Robots and Systems
 - IEEE International Conference on Mobile Data Management
 - IASTED International Conference on Parallel and Distributed Computing and Systems
 - IEEE Conference on Control Applications
 - International Conference on Industrial Informatics
 - International Workshop on Networked Sensing Systems

- IFAC World Congress

◆ **Miscellaneous:**

- ◆ Scribe at the International Conference on Mobile Systems, Applications, and Services (MobiSys 05) [Summary appeared in ;login: *The USENIX Magazine*, 30(5), October 2005.] June 2005

PROFESSIONAL AFFILIATIONS

- ◆ IEEE Student Member
- ◆ IEEE Computer Society Student Member
- ◆ Jordan Engineers Association

PUBLICATIONS

◆ **Journal Papers:**

1. Ahmad T. Al-Hammouri, Wenhui Zhang, Robert F. Buchheit, Vincenzo Liberatore, Panos K. Chrysanthis, and Kirk Pruhs. Network awareness and application adaptability. *Information Systems and E-Business Management*, 4(4):399–419, October 2006.
2. Ahmad T. Al-Hammouri, Vincenzo Liberatore, Michael S. Branicky, and Stephen M. Phillips. Complete stability region characterization for PI-AQM. *SIGBED Review*, 3(2), April 2006.
3. Nathan A. Wedge, Ahmad T. Al-Hammouri, Michael S. Branicky, and Vincenzo Liberatore. Discussion on: Development and experimental verification of a mobile client-centric networked controlled System. *European Journal of Control*, 11(2):243–246, 2005.

◆ **Conference and Workshop Papers:** [Presenter's name is in boldface]

1. Ahmad T. Al-Hammouri, Michael S. Branicky, and Vincenzo Liberatore. Co-simulation tools for networked control systems. In *International Conference on Hybrid Systems: Computation and Control (HSCC 08)*, St. Louis, MO, USA, April 2008.
2. Ahmad T. Al-Hammouri, **Vincenzo Liberatore**, Huthaifa Al-Omari, Zakaria Al-Qudah, Michael S. Branicky, and Deepak Agrawal. A co-simulation platform for actuator networks. In *ACM Conference on Embedded Networked Sensor Systems (SenSys 07)*, Sydney, Australia, November 2007. Demonstration.
3. **Ahmad T. Al-Hammouri** and Vincenzo Liberatore. Analytic derivation of the PI-AQM stability region. In *Northeast Ohio Networking Workshop (NEONet 07)*, Baldwin Wallace College, Cleveland, OH, USA, April 2007. Short Abstract.
4. **Ahmad T. Al-Hammouri**, Michael S. Branicky, Vincenzo Liberatore, and Stephen M. Phillips. Decentralized and dynamic bandwidth allocation in networked control systems. In *International Workshop on Parallel and Distributed Real-Time Systems (WPDRTS 06)*, Island of Rhodes, Greece, April 2006.
5. **Ahmad T. Al-Hammouri**, Vincenzo Liberatore, Michael S. Branicky, and Stephen M. Phillips. Parameterizing PI congestion controllers. In *International Workshop on Feedback Control Implementation and Design in Computing Systems and Networks (FeBID 06)*, Vancouver, Canada, April 2006.
6. **Ahmad T. Al-Hammouri**, Vincenzo Liberatore, Huthaifa A. Al-Omari, and Stephen M. Phillips. Transversal issues in real-time sense-and-respond systems. In *ACM Workshop on End-to-End, Sense-and-Respond Systems, Applications, and Services (EESR 05)*, Seattle, WA, USA, June 2005.
7. **Ahmad T. Al-Hammouri** and Vincenzo Liberatore. Optimization congestion control for networked control systems. In *IEEE INFOCOM Student Workshop*, Miami, FL, USA, March 2005. Abstract.
8. **Ahmad T. Al-Hammouri**, Vincenzo Liberatore, and Michael S. Branicky. A testbed for networked control systems. In *Research ShowCase*, Case Western Reserve University, Cleveland, OH, USA, April 2004. Poster.
9. Ahmad T. Al-Hammouri, Adam Covitch, David Rosas, Murat Kose, Wyatt S. Newman, and **Vincenzo Liberatore**. Compliant control and software agents for Internet robotics. In *IEEE International Workshop on Object-oriented Real-time Dependable Systems (WORDS 03)*, January 2003.

10. **Vincenzo Liberatore**, Wyatt Newman, Ahmad T. Al-Hammouri, Adam Covitch, David Rosas, and Murat Kose. Remote interaction with machines. In *Wireless Communications and Networking Workshop*, Case Western Reserve University, Cleveland, OH, USA, November 2002. Poster and live demonstration.

◆ **Talks and Presentations:** [in addition to conference/workshop presentations listed above]

1. A real-time CORBA middleware for networked surgical simulations. In *Ohio ICE Technical Conference*, University of Akron, Akron, OH, USA, October 2006.
2. Several presentations on various topics related to Networks. In *Network Chat course*, Electrical Engineering and Computer Science Department, Case Western Reserve University, Cleveland, OH, USA, 2004 – 2007.

SKILLS

- ◆ **Operating Systems:** UNIX based systems (Linux, Solaris and FreeBSD), Mac OS X, and Windows (9X, 2000 and XP)
- ◆ **Programming and Scripting Languages:** C, C++, Java, UNIX Shells, Tcl, Perl, Matlab, Modelica, and HTML
- ◆ **Assembly Languages:** Motorola 68K
- ◆ **Hardware Descriptive Languages:** VHDL and Verilog
- ◆ **Tools and Applications:** Mentor Graphic Tools, Dymola, Matlab and Simulink, Mathematica, Minitab, L^AT_EX and productivity tools such as Microsoft Office, Adobe PhotoShop, Adobe Illustrator, and Macromedia Dreamweaver

TEACHING

◆ **Courses Taught:**

- ◆ **CPE 412:** Modeling and Simulation Spring 2008
- ◆ **CS 115:** C++ Programming Spring 2008

REFERENCES

- ◆ Available upon request