



The 42nd Annual IEEE/IFIP International Conference on
Dependable Systems and Networks (DSN 2012)
June 25 - 28, 2012 — Boston, Massachusetts, USA

Workshop on Open Resilient Human-aware Cyber-Physical Systems (WORCS-2012)

Organizers: **Mohamed Kaâniche**, LAAS-CNRS, Univ. Toulouse, France
Michael Harrison, Queen Mary Univ. London, UK
Hermann Kopetz, Technical Univ. Vienna, Austria
Daniel Siewiorek, Carnegie Mellon Univ., USA

Monday June 25, 2012

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Context & Motivations

- **Cyber-Physical Systems**
 - Tight integration of computation, communication and control into physical systems
- Increasing development of smart, networked, context-aware, adaptive and highly reactive, mission-critical CPS, with massive deployment of sensors, actuators in highly dynamic physical environments involving social interactions

**Health care &
home assistance**

**Emergency &
Disaster response**

**Environment &
People sensing**

**Digital public
spaces**

**Smart
power
grids**

Transportation

Challenges and Workshop Objectives

- Requirements of CPS of the future will far exceed those of today's systems in terms of functionality, usability, adaptability, autonomy, timeliness and resilience
- Provide a forum at DSN to discuss:
 - Multidisciplinary approaches integrating **technological concerns** including physical system dynamics and ICT aspects, **but also social and human related aspects**
 - **Resilient Human-aware self-adapting approaches** to autonomously adapt to dynamic changes in system behavior, environment or threats
 - **Integrated and scalable design and assessment techniques** for optimal trade-offs during system engineering phases and at runtime

Program at a Glance

08:30-10:15 — SESSION 1: Resilient Medical and Health Care CPS

- **Invited Talk — Challenges in Medical Cyber-Physical Systems**
Insup Lee, U. Pennsylvania, USA
- **Invited Talk — Virtual Coaches in Health Care**
Daniel Siewiorek, CMU, USA

10:15 - 10:45 — Break

10:45-12:00 — SESSION 2: User-Centric Approaches

- **Invited Talk — A Model and Simulation for User-Centric Automation Devices and Systems**
Jane Liu, Institute of Information Science, Academia Sinica, Taiwan
- **Smart Checklist for Human intensive Medical Systems**
*Goerge Avrunin (1), Lori Clarke(1), Leon Osterweil(1), Julian Goldman (2); Tracy Rauch (3)
(1) U. Massachusetts Amherst; (2) Massachusetts General Hospital; (3) DocBox, Inc.; USA*

12:00 - 13:30 — Lunch

13:30-15:00 — SESSION 3: Design, Monitoring, and Security

- **Toward Resiliency in Embedded Monitoring Systems**
Homa Alemzadeh (1), Catello Di Martino (1), Zhanpeng Jin (2), Zbigniew Karlbarczyk (1), Ravishankar Iyer (1); (1) U. Illinois at Urbana Champaign; (2) State U. of New York; USA
- **A Rigorous Approach to the Design of Cyber-Physical Systems through Co-Simulation**
John Fitzgerald, Ken Pierce, Carl Gamble, U. of Newcastle, UK
- **Physical Attack Protection with Human-secure Virtualization in Data Centers**
Jakub Szefer, Pramod Jamkhedkar, Yu-Yuan Chen, Ruby Lee, Princeton U., USA

15:00 - 15:30 — Break

Program at a Glance

15:30-16:00 — SESSION 3: Design, Monitoring, and Security (cont.)

- **MILS-Related information Flow Control in the Avionic domain: A View on security-Enhancing Software Architectures**

K. Muller (1), M. Paulitsch (1), S. Tverdyshev (2), and H. Basum (2); (1) EADS Innovation Works, Munich; (2) SYSGO AG, Keln-Winternheim; Germany

16:00-17:00 — Panel

- **Challenges and Research Directions in Resilient Cyber-Physical Systems**

Panelists:

Keith Marzullo, National Science Foundation, USA

Takashi Nanya, Canon Inc., Tokyo, Japan

Insup Lee, University of Pennsylvania, USA

Jane Liu, Institute of Information Science, Academia Sinica, Taiwan

Daniel Siewiorek, Carnegie Mellon University, USA

17:00 — Adjourn