PerMIS'12

Performance Metrics for Intelligent Systems Workshop

March 20-22, 2012

http://www.nist.gov/mel/isd/permis2012.cfm/

Call for Participation

The 2012 Performance Metrics for Intelligent Systems (PerMIS'12) Workshop will be the eleventh in a series of workshops dedicated to defining measures and methodologies of evaluating performance of intelligent systems. Started in 2000, the PerMIS series focuses on applications of performance measures to applied problems in commercial, industrial, homeland security, and military applications.

PerMIS'12 will focus on the ***methodologies and techniques of performance measurement for developing and engineering the next generation of cyber physical systems that facilitate seamless human-machine collaboration***. In the context of the Workshop, Cyber Physical Systems (CPS) are taken to mean the "tight conjoining of and coordination between computational and physical resources" [National Science Foundation CPS Program Definition].

In relation to the main theme, topic areas include, but are not limited to:

- Defining, Measuring, and Engineering Capabilities of CPS:
  - Human-System Interaction, Collaboration and Coordination
  - Interoperability, Safety, Security, and Connectivity
  - Responsiveness, Reliability, Trustworthiness, Interchangeability, Durability
  - Portability, Mobility, and Scalability of Autonomous Systems
  - Levels of Autonomy
  - Predictable and cost-effective measurement science frameworks
- Evaluating Components within Intelligent Systems:
  - Sensing and Perception
  - Knowledge Representation, World Models, Ontologies
  - Planning and Control
  - Learning, Adapting and Reasoning
- Underlying Infrastructural Support for Performance Assessment:
  - Testing and Evaluation (including testbeds and competitions for inter-comparisons)
  - Instrumentation and Other Measurement Tools
  - Simulation and Modeling
- Technology Readiness Measures for Intelligent Systems
- Benchmarks and Applied Performance Measures and Metrics in Various Domains:
  - Manufacturing, Logistics, and Industrial Systems
  - Service: Domestic, Mining, Agriculture, …
  - Intelligent Transportation Systems
  - Defense and Security
  - Emergency Response Robots (e.g. search and rescue, bomb disposal)
  - Intelligent Systems and Robots for Hazardous Environments (e.g. nuclear remediation)
  - Smart Grid
  - Space Robotics
  - Medical & Healthcare Systems and Devices

The Proceedings of PerMIS are indexed by INSPEC, Compendex, ACM Digital Library, and are released as a NIST Special Publication.

Plenary Speakers

- George W. Arnold, National Institute of Standards and Technology: *Performance and New Paradigms for the Electric Power System*
- Prof. Edward A. Lee, UC Berkeley: *Time for High-Confidence Cyber-Physical Systems*
- Mark Rice, Maritime Applied Physics Corporation: *Geographic Information Systems (GIS)*
- Holly Yanco, UMass Lowell*: Evaluate Early, Evaluate Often: A Design Process for Creating Better Robot Systems*
- Satyandra K. Gupta, UMD College Park
- Jim Overholt, U.S. Army TARDEC

Special Sessions & Panel Discussion

- Session Honoring the Legacy of Jim Albus & Alex Meystel
- Performance Evaluation and Advanced Algorithms for Static & Dynamic 6DOF
- Technology Readiness for Randomized Bin Picking Solutions
- Cyber Physical Systems Panel Discussion

National Institute of Standards and Technology

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Location
UMD Inn and Conference Center

Sponsors
NIST, DARPA, UMD Robotics Center, ACM-SIGART, IEEE-RAS TC-PEBRAS, IEEE W/NV Sensors Council Chapter