

IEEE/NSF Workshop on Cloud Manufacturing and Automation

Co-Chairs: Ken Goldberg, Dezhen Song, and M. Ani Hsieh

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Location: Assembly Room

Held at IEEE Conference on Automation Science and Engineering (CASE) Madison, Wisconsin

<http://case2013.org/WorkshopTutorials/CMA.html>

Introduction: This one-day IEEE/NSF workshop will explore the potential for Cloud Computing to dramatically improve manufacturing and automation. Cloud Computing and related topics such as G.E.'s Industrial Internet, Germany's Industry 4.0, and the Internet of Things have the potential to remove current computation and memory limitations of robotic and automation systems and vastly increase availability of real-time data. Cloud Computing can also provide rapid access to computing power, crowd sourcing, and open-source software. Many new research problems arise, such as architecture, security, performance/speed tradeoffs, standards, uncertainty, reliability, planning and scheduling. This workshop will provide a forum to present new developments and explore future topics and jointly prepare a report on this emerging topic.

Program:

[08:30-09:00] *An Introduction to Cloud Automation*, Ken Goldberg (UC Berkeley)

[09:00-09:30] *A report of the first cloud robotics workshop*, Richard Voyles (NSF)

Session 1: [Session Chair: Ken Goldberg]

[09:30-09:50] *The industrial Internet*, Austars Schnore (GE)

[09:50-10:10] *The Humans in the Cloud: Towards Shared Autonomy over the Internet*, Matei Ciocarlie (Willow Garage)

[10:10-10:30] *Internet of Things*, MengChu Zhou (New Jersey Institute of Technology)

[10:30-10:50] *Progress in Algorithmic Motion Planning Related to Cloud Robotics, Automation and Manufacturing*, Kostas Bekris (Rutgers University)

[10:50-11:35] Panel and Discussion

[11:35-13:00] Lunch Break

Session 2: [Session Chair: Dezhen Song]

[13:00-13:20] *Robotics as a Service (RaaS): A Service Model for Robotics and Automation Software*, Ben Kehoe and Arjun Singh (UC Berkeley)

[13:20-13:40] *A Practitioner's Experience of the use of Cloud Computing in Control*, Sekou Remy (Clemson)

[13:40-14:00] *Cloud Manufacturing in Healthcare: A Gamma Knife Center Experience*, Emin Kececi (UVA)

[14:00-14:20] *Cyberinfrastructure enabling personalized production*, Dawn Tilbury (U Michigan)

[14:20-15:05] Panel and Discussion

[15:05-15:15] Break

Session 3: [Session Chair: Kevin Lynch]

[15:15-15:35] *View planning for object recognition*, Gabriel Oliveira (UMN)

[15:35-15:55] *Flexible Manufacturing Line with Multiple Robotic Cells*, Heping Chen (Texas State U., formerly at ABB)

[15:55-16:15] *Cloud Mediated Nature Observation*, Dezhen Song (Texas A&M)

[16:15-17:00] Panel and Discussion