Symposium on

The Digital Nuclear Power Plant: Design, License and Operate at Minimal Cost

MIT Center for Advanced Nuclear Energy Systems (CANES),
A MITEI Low-Carbon Energy Center

April 30-May 1, 2019
MIT Walker Memorial – Building 50, Room Morss Hall
142 Memorial Drive, Cambridge, MA 02139 USA

This symposium will showcase the latest advances in informatics, simulation, robotics and AI to reduce the cost of designing, licensing and operating the nuclear systems of the future. The audience will comprise senior technical representatives from electric utilities, nuclear vendors, national labs, NRC and academia.

Day 1 - Tuesday, April 30, 2019

8:30a-9:30a  Registration and Coffee

9:30a-9:50a  Welcome and Intro: Bob Armstrong (MITEI), Jacopo Buongiorno (CANES)

9:50a-12:00a  SESSION 1: Towards Digital Design of NPPs (Session Chair: Emilio Baglietto)
  o  Next Steps in Building on Modeling and Simulation Activities for Digital NPP Design: Jess Gehin (INL)
  o  ??? - Dave Pointer (ORNL)
  o  A balanced coupling and automation approach for efficient reactor engineering: Nick Touran (TerraPower)

12:00p-1:30p  WORKING LUNCH - Automated operation in deep-space nuclear reactors
  o  Lee Mason (NASA)

1:30p-3:00p  SESSION 2: Robotics for O&M and emergency response (Session Chair: Koroush Shirvan)
  o  Integrating Robotics into the Nuclear Industry: Mark Urso (Westinghouse)
  o  ????: Jeremy Renshaw (EPRI)
  o  Robotics for Decommissioning Activities at Fukushima-Daiichi Nuclear Power Plant: Takeshi Komuro (TEPCO)

3:00p-3:30p  Break
3:30p-5:00p  SESSION 3: AI for O&M and emergency response (Session Chair: Matteo Bucci)
  o  Ageing monitoring and prediction of critical components in nuclear power plants: application to concrete structure: Abderrahim Al Mazouzi (Electricite de France)
  o  Advanced Diagnostics use in the nuclear power industry – successes and challenges: Elliott Flick (Exelon)
  o  Online Monitoring and Automation of Nuclear Power Plants: Vivek Agarwal (INL)
  o  Development of a Nearly Autonomous Management and Control System for Advanced Reactors: Jason Hou (NCSU)

5:30-6:30p  Robot demo by Sangbae Kim

6:30p  Guest relocate to MIT Museum - Building N51
  Address: 265 Massachusetts Avenue, Cambridge, MA 02139 -

7:00p-9:00p  Cocktail Reception and Dinner: Celebration of Kord Smith’s work
  Dinner MC: Dennis Whyte
  Brief remarks: Benoit Forget, William Boyd
  Speaker: Kord Smith:

Day 2 - Wednesday, May 1, 2019

8:00a-9:00a  Registration and Coffee

9:00a-12:00p  SESSION 4: How other industries do it? (Chair: Jacopo Buongiorno)
  o  Advancing the Role of Autonomy in the Pilot’s Seat: Donald Rogers (Aurora-Boeing)
  o  Gas Turbine Autonomous Control System: Gurdev Singh (Siemens)
  o  Integration of design and construction in marine craft: Mario Caponnetto (Caponnetto-Hueber)
  o  Title????????: Carmine Senatore (Exponent)

12:00p  Adjourn