

DIGITAL TWIN TECHNOLOGY: A KEY ENABLER OF SMART MANUFACTURING

NSF CPS PI MEETING 2018

SIBIN MOHAN

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

[SIBIN@ILLINOIS.EDU]

KIRA BARTON

UNIVERSITY OF MICHIGAN ANN-ARBOR

[BARTONKL@UMICH.EDU]

PANEL 1 | 10:20 AM – 11:30 AM

SHORTCOMINGS/NEEDS IN DIGITAL TWINS AND MODELING FOR SMART MANUFACTURING

- PANELISTS
 - YAN LU [NIST]
 - ARMAN SABBAGHI [PURDUE UNIVERSITY]
 - QIANG HUANG [UNIVERSITY OF SOUTHERN CALIFORNIA - LOS ANGELES]
 - XIAOQING [FRANK] LIU [UNIVERSITY OF ARKANSAS]
 - MING LEU [MISSOURI UNIVERSITY OF SCIENCE AND TECHNOLOGY]

PANEL 2 | 11:30 AM – 12:45 PM
**FUTURE TECHNOLOGIES TO ENABLE DIGITAL TWINS
AND MODELING FOR SMART MANUFACTURING**

- PANELISTS
 - JAMES MOYNE [APPLIED MATERIALS]
 - YE [SARAH] SUN [MICHIGAN TECHNOLOGICAL UNIVERISTY]
 - PRAHLADA RAO [UNIVERSITY OF NEBRASKA-LINCOLN]
 - ZHIHAI [HENRY] HE [UNIVERSITY OF MISSOURI]

WORKSHOP DETAILS

- PRESENTATIONS + ACTIVE DISCUSSIONS
- APPROX. 30 ATTENDEES
- MIX OF GOVERNMENT, INDUSTRY AND ACADEMIA

DISCUSSION NOTES

- DIGITAL TWINS FOR **ADDITIVE MANUFACTURING**
- DIFFERENT TYPES OF DIGITAL TWINS: PROSCRIPTIVE VS DESCRIPTIVE
- SECURITY & INDUSTRY BUY-IN
 - PROTECTING IP
- CLOUD COMPUTING & DATA ANALYTICS: DIGITAL TWINS AND MANUFACTURING PROCESSES
- NEW TECHNOLOGIES SUCH AS MACHINE LEARNING AND AUGMENTED REALITY

KEY CHALLENGES

- INTEGRATING DIFFERENT DIGITAL TWINS HORIZONTALLY AND VERTICALLY
- UNDERSTANDING DATA USE, PROCESSING AND PROVENANCE
- DATA-DRIVEN VS PHYSICS-DRIVEN: WHERE IN THE SPECTRUM SHOULD THE DIGITAL TWIN(S) LIE?
- HOW DO WE CAPTURE/INTEGRATE/AUTOMATE SUBJECT MATTER EXPERTISE?
 - COULD ADDITIONAL SENSORS (VISION, INFRA-RED, X-RAY, AUDIO, ETC. HELP?)

THANKS!

- PLEASE SEND YOUR COMMENTS AND FEEDBACK!

- **SIBIN@ILLINOIS.EDU**
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- **WORKSHOP AT CPS-IOT WEEK 2019:**

1ST INTERNATIONAL WORKSHOP ON SMART MANUFACTURING MODELING AND ANALYSIS [SM²N]

MONTREAL, CANADA

APRIL 15, 2019