Industry 4.0: Artificial Intelligence and Machine Learning in AM

The rapid advancement of additive manufacturing (AM) technologies and increased adoption of the technologies in industry have coincided with the emergence of artificial intelligence and machine learning (AI & ML) in the mainstream. A massive amount of data is being generated in AM from various steps of the AM process, including design, process planning, building, in-situ monitoring, post-processing, inspection, characterization, and testing, as well as operation performance, during the service life of the component. Further, a high number of parameters are being defined for monitoring and control of AM processes. Both data and parameters make AM a great candidate for AI and ML applications. The objective of applying AI & ML is to better understand underlying physical phenomena in AM, and fine tune the AM processes.

This symposium aims to cover the following topics:
- Landscape survey and analysis: AI & ML in AM
- Applications of AI & ML in
  - Design optimization
  - Process optimization
  - In-situ monitoring signal to defect correlation
  - Material-Process-Microstructure-Property relationships
  - Predictive maintenance
  - Process qualification
- AM data requirements for enabling AI & ML
- Infrastructure design and software development for AI & ML in AM
- Data and software integration for findability, accessibility, interoperability, and reusability
- Big data analytics in AM; definition and case studies
- Standardization needs for AI & ML in AM
- Platform design for data sharing and collaboration in AI & ML in AM

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Location: TBD
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Call for abstracts is open!
www.amcoe.org/icam2021

Symposium Organizers
- Shaw Feng, NIST, USA
- Jia “Peter” Liu, Auburn University, USA
- Aaron Stebner, Georgia Tech, USA