EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

The Convergence of Connected Machines, Deep Learning and Blockchain Technologies for Driving Manufacturing-as-a-Service (MaaS) Platforms

ABSTRACT – Future factories will feature strong integration of physical machines and cyber - enabled software, working seamlessly to improve manufacturing production efficiency. This efficiency gains also translates to shortening the product development and manufacturing lifecycle leading towards the realization of personalized manufacturing. MaaS is the shared use of networked manufacturing infrastructure to deliver manufacturing resources on-demand while maximizing capacity utilization and reducing costs to produce prototype and production grade one-off products. Several technologies are enabling the growth of MaaS – 1) Networked machines communicating over the web are enabling on-demand access to manufacturing machines such as 3D printers and CNC machines; 2) Search engines provide the ability for product designers to easily find and match relevant manufacturing services with specific product manufacturing data contained within the digital models; 3) Decentralization through Blockchain technologies also ensure that manufacturing data is secure, belongs to the data generator and can enable the easy accessibility of manufacturing services in a MaaS enabled marketplace. This presentation will shed light on all three of these enabling technologies, the scientific and technology challenges that remain and if solved, the potential impact it will have on the broader society. This work is currently funded by the National Science Foundation.

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SPEAKER BIO – Dr. Binil Starly is Professor in the Industrial and Systems Engineering at North Carolina State University (NCSU) and Co-Director of the Functional Tissue Engineering Group, Comparative Medicine Institute. He also leads the Data Intensive Manufacturing Environment (DIME) Lab at NCSU. He has received the National Science Foundation CAREER award for research in engineering living tissue systems, the SME Young Manufacturing Engineer and other teaching awards through his career. He has over 80 peer reviewed journal publications/conference proceedings and awarded 1 US Patent in the field of micro-organ devices. He has advised more than 20 graduate research students and is currently working with 8 students towards their master's thesis and doctoral degrees. He currently teaches Product Development and digitally enabled manufacturing courses at the undergraduate and graduate level. His current research activities can be found at http://www.dimelab.org. He is currently involved in commercializing technology for his laboratory through a university based startup.

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