

# EPSTEIN INSTITUTE SEMINAR ▪ ISE 651

## Smart Manufacturing Modeling with Functional Data

**ABSTRACT** – Modern manufacturing needs to optimize the entire product lifecycle to satisfy the highly diverse customer needs. With the deployment of Industrial Internet and sensor/actuator networks, data-driven decision making is expected to enable smart manufacturing to achieve high level of adaptability and flexibility. Such a manufacturing system generates spatially and temporally dense data sets. This talk focuses on manufacturing modeling problems with functional data, where the models will be used in data-driven decision making in smart manufacturing. Examples in functional variable selections, *in situ* process modeling, and data interpretation from natural language processing perspective will be discussed in this talk. The methodology has been broadly applied to many advanced manufacturing processes, such as aero-engine manufacturing, crystal growth manufacturing, and additive manufacturing.



**Dr. Ran Jin**

Assistant Professor  
Grado Department of Industrial and  
Systems Engineering, Virginia Tech

**SPEAKER BIO** – Dr. Ran Jin is an Assistant Professor and the Director of Laboratory of Data Science and Visualization at the Grado Department of Industrial and Systems Engineering at Virginia Tech. He received his Ph.D. degree in Industrial Engineering from Georgia Tech, Atlanta, his Master's degrees in Industrial Engineering and in Statistics, both from the University of Michigan, Ann Arbor, and his bachelor's degree in Electronic Engineering from Tsinghua University, Beijing. His research focuses on Data Fusion in Smart Manufacturing, including the integration of different types of data sets (e.g., ensemble models), variables (e.g., quantitative and qualitative models), and information (e.g., product quality and equipment reliability) for synergistically modeling, monitoring and control of manufacturing processes and systems. He is currently serving as an Associate Editor for *IISE Transactions*, Focus Issue on *Design and Manufacturing*. For more information about Dr. Jin, please visit: [http://www.ise.vt.edu/People/Faculty/Bios/JinRan\\_bio.html](http://www.ise.vt.edu/People/Faculty/Bios/JinRan_bio.html)

**USC Viterbi**  
School of Engineering  
*Daniel J. Epstein Department of  
Industrial and Systems Engineering*

**TUESDAY, APRIL 11, 2017**

**3:30PM – 4:50PM**

USC ANDRUS GERONTOLOGY CENTER (GER), Room 206