

# Intelligent Operation and PHM of Industrial Systems

Industrial systems are widely used in manufacturing, transportation, infrastructure, harbour, petrochemical, nuclear, and metallurgical industries. The safe, reliable, and economic operation of such systems are of paramount importance to our society. This talk will list the performance requirements of these systems including functionality, safety, reliability, and sustainability, introduce applications of intelligent operation in quality control, remote control, and dynamic production planning, and highlight the importance of Prognosis and Health Management (PHM) for value realization of industrial systems. Finally, this talk will outline the setup of an Intelligent Operation & PHM (IOPHM) system possessing capabilities of data acquisition, data analysis, data mining, anomaly detection, fault diagnosis, prediction of equipment remaining useful life, and generation of optimal decisions for operation control, spare parts inventory management, maintenance personnel and task scheduling, and equipment life cycle management. Such an IOPHM system is essential for the safe, reliable, and sustainable operation and effective life cycle management of industrial systems.



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