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Automatic
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The Department of Automatic Control & Systems Engineering
is pleased to announce the following seminar:

Simulation of Flexible Manufacturing System: A Case Study

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Wednesday, 17 October 2018 at 14:00

Sir Henry Stephenson Building, LT02

Abstract

This presentation describes how simulation can be an effective tool for investigating the dynamic behaviour of complex manufacturing systems. Flexible Manufacturing System (FMS) aims to provide optimal machine flexibility, process flexibility, and product flexibility. However, releasing flexibility in FMS is challenging due to the necessary complexity of coordinating all subsystems while simultaneously scheduling multiple product families. In this presentation, an automotive industry case study is outlined, and a Discrete Event Simulation (DES) model has been introduced. The model sufficiently represents all primary subsystems to capture their dynamic interactions, providing a bird's eye view of all critical activities within an FMS. A series of manufacturing problems and their corresponding hypothetical solutions have been explored and evaluated in a number of simulation scenarios. The results demonstrate that releasing FMS flexibility can result in significant performance improvements whilst also removing barriers (such as operation sequencing or line balancing) associated with dedicated manufacturing systems.

Biography

Boyang Song is a Research Associate working in the Department of Automatic Control and Systems Engineering. After received his BEng degree in automotive engineering, he worked on several product development and manufacturing projects in the automotive industry. He pursued his MSc in Engineering and Management of Manufacturing Systems and completing his PhD in simulation and optimisation for Flexible Manufacturing Systems at Cranfield University. He works focus on operational research especially for production planning and scheduling, interests in developing and applying simulation, optimisation, data analytics and IIoT technologies into manufacturing information systems.