

Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : Daaboul Given names : Joanna

Status (prof., assistant prof., ...) : Assistant Professor

Laboratory : Roberval Laboratory Website address : <http://roberval.utc.fr/>

Institution : University of Technology, Compiègne (UTC) Website address : <https://www.utc.fr/>

Scientific competence of the supervisor:

Dr. Joanna DAABOUL is Associate Professor at Université de Technologie de Compiègne and researcher in Roberval Mechanical Laboratory (UMR CNRS 7337). She obtained a PhD in Mechanical Engineering from Ecole Centrale in 2011. Currently, her research interests include Product variety management, Enterprise Modeling, Systems Performance evaluation, Product/Process integration, and Mass Customization. She published more than 30 papers in refereed international journals, books and conferences.

Two major publications in the field proposed for the PhD :

1. Daaboul, J., Da Cunha, C., Le Duigou, J., Novak, B., Bernard, A., 2015. Differentiation and customer decoupling points: An integrated design approach for mass customization. *Concurrent Engineering: Research*
2. Li, J., Daaboul, J., Tong, S., Bosch-Mauchand, M., Eynard, B., 2015. A design pattern for industrial robot: User-customized configuration engineering. *Robotics and Computer-Integrated Manufacturing*, 31, 30-39.

Website address of the personal page : <http://www.utc.fr/~jdaaboul/index.php>

Supervisor's email : joanna.daaboul@utc.fr

Description of the research work proposed for a PhD

Topic # (see list) : VI-1

Title : Planning of reconfigurable production (manufacturing) systems for mass customized products

Subject :

Given the evolution of the economy characterized by a strong globalization, an increasingly short product life cycle, and high technological development, manufacturers must adapt and respond to customer-driven production, in which the customer wishes to acquire products allowing him to express his individuality and his personality. This induces a wide variety of products and the emergence of new paradigms such as mass customization. To survive in this environment, manufacturers have evolved their processes towards flexible, agile and reconfigurable systems. Nevertheless, the production management in the context of a reconfigurable system is not the same as with a fixed system. Added to this is the complexity of planning production for customized products, for which we must wait for the customer order to know all his requirements and expectations. There is research work on production planning in the context of mass customization and in the context of reconfigurable production systems, but this work remains modest. Moreover, to our knowledge, there is no work to improve production planning in the context of reconfigurable production system and mass customization simultaneously. Moreover, reconfigurable manufacturing systems are one key technology for industry 4.0 that aims at providing customized products. Hence, this research is under industry 4.0 research directions.

Keywords :

reconfigurable manufacturing system, mass customization, flexible production systems, intelligent production planning

Expected collaborations :

Possible collaborations with industrial partners for the case study.

Background required from the applicant :

Production management, some skills in operations research and decision theory.

Existence of a PDF file detailing the proposal ("yes" or "no") : Yes

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