

Research Topic for the Arts et Métiers ParisTech - CSC PhD Program

Subfield: (Applied Physics, Chemistry, Mathematics, Mech. Eng. etc...) Industrial Engineering, Enterprise Engineering, Information System Engineering, Decision Making

ParisTech School: Arts et Metiers

Title: From Cyber Physical Systems(CPS) to Enterprise Information System in Industry 4.0 context

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Short description of possible research topics for a PhD: (10-15 lines in English + optional figure)

In an industry 4.0 context, production systems are more and more based on CPS (Cyber Physical Systems). CPS are transformative technologies for managing interconnected systems between its physical assets and computational capabilities. Through CPS factories become self-configured, self-maintained and self-organized. These systems enable to retrieve more and more data from all the shop floor levels (machines, production state, ..). One major challenge is to define the efficient use of these new data. Generally recent works propose tools for direct handling and exploitation of these data using data visualization or prediction techniques like PHM. However, the integrative link between the applications (ERP, MES, PLM...) on which the enterprise information system (IS) is based and the CPS remains an open question. This link has to be managed in order to support decision making for the production system and products evolution. Therefore, the objective of this work is to set up IS engineering approaches enabling to define the way to couple CPS data and IS applications. We will focus among other on the influence between the CPS data and the impacted business process, using for example semantic annotation.

Required background of the student: (Which should be the main field of study of the applicant before applying) industrial engineering, information system engineering

A list of 5 (max.) representative publications of the group: (Related to the research topic)

L. SHAH, A. ETIENNE, A. SIADAT, F. VERNADAT, "Decision-making in the manufacturing environment using a value-risk graph", Journal of Intelligent Manufacturing, , (2014), 1-14

S. BASSETTO, A. SIADAT, M. TOLLENAERE, "The management of process control deployment using interactions in risks analyses", Journal of Loss Prevention in the Process Industries, 24 (4) (2011), 458-465

S. MAMOGHLI, V. GOEPP, V. BOTTA-GENOULAZ, An operational "Risk Factor Driven" approach for the mitigation and monitoring of the "Misalignment Risk" in Enterprise Resource Planning projects", Computers in Industry, 70 (2015) 1-12.

V. GOEPP , O. AVILA, "An Extended-Strategic Alignment Model for technical information system alignmen"t, International Journal of Computer Integrated Manufacturing, 28 (12) (2015) 1275-1290.

FOR APPLICATION, PLEASE CONTACT ADVISOR(S) BY EMAIL WITH COPY TO:

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