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 : BIENNIER Given names : Frédérique

Status (prof., assistant prof., …) : Prof.

Laboratory :	LIRIS	Website address : http://liris.cnrs.fr/
Institution :	INSA Lyon	Website address : http://liris.cnrs.fr/membres?idn=fbiennie

Scientific competence of the supervisor:

Service based organisation, service based legacy systems, middleware, event-driven process organisation, Transaction Procesing. This PhD project gathers former Service oriented Organization works with curent event-driven distributed process organisation in SMAC IT context

Two major publications in the field proposed for the PhD :

1. Hens P., Snoeck M., Poels G., Backer M.D. (2014). Process fragmentation, distribution and execution using an event-based interaction scheme. J. Syst. Softw., 89 (2014), pp. 170-192
2. Distributed Transaction Processing. The XA specification. http://pubs.opengroup.org/onlinepubs/009680699/toc.pdf

Website address of the personal page :

Supervisor's email : frederique.biennier@insa-lyon.fr

Description of the research work proposed for a PhD ***Topic # (see list) :*** I-11, VI-1

Title : Data-driven transaction processing: modelling multi-peers transaction thanks to transaction composition

Subject :

From the early 1970 Transaction Processing works to the newest Blockchain-based smart contracts and Distributed Application Organisation, Transaction Processing (TP for short) has been designed, studied and implemented as Peer to Peer (P2P) system, organizing and logging safely exchanges and supporting ACID and immutable properties. Such P2P underlying formal models do not fit the increasing call for large-scale and distributed event-based processes involved by the SMACIT (Social, Mobile, Analytic, Cloud and Internet of Thing) distributed applications. These large-scale distributed architectures require rethinking this transaction organisation, supporting multi-peers and distributed ledgers within a reasonable cost and time frame. Taking advantage of service oriented architecture, providing a strong composition and orchestration background, this PhD project aims at designing a distributed and multi-peers Transaction Processing formal model. More precisely, this work will focus on a model-driven approach to guide transaction composition and to set distributed roll-back processes, providing a generic multi-peers distributed architecture, supporting ad-hoc multi-peers transaction management.

Keywords :

Transaction processing, formal model, composition, Distributed ledger, ad-hoc pocess, mutli-peers transactions organisation

Expected collaborations :

Collaborations with some partners of the Service Oriented Computing team are expected

Background required from the applicant :

Preferably IT and computer science background. Mathematical or telecommunication background having a strong motivation for IT systems may also fit this research project

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

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