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 : Hasan Given names : Omar

Status (prof., assistant prof., …) : Associate Professor

Laboratory :	LIRIS - UMR CNRS 5205	Website address : http://liris.cnrs.fr/
Institution :	INSA Lyon	Website address : http://insa-lyon.fr/

Scientific competence of the supervisor:

This PhD will be supervised by Prof. Lionel Brunie and Dr. Omar Hasan. Prof. Lionel Brunie is the director of the Department of Computer Science. His main topics of interest include: distributed and ubiquitous systems, medical informatics. Lionel Brunie is the (co-)author of over 200 research papers; he has been member of over 70 international scientific conference and workshop committees. Dr. Omar Hasan, Associate Professor at the LIRIS laboratory, is active in the area of distributed systems and has published in top international journals such as Elsevier Computer Networks and Elsevier Ad Hoc Networks.

Two major publications in the field proposed for the PhD :

1. Supplier Impersonation Fraud Detection in Business-To-Business Transaction Networks using Self-Organizing Maps. R. Canillas, O. Hasan, L. Brunie, and L. Sarrat. 8th Intl. Conf. on Complex Networks 2019. Dec. 2019.
2. Trust Management and Reputation Systems in Mobile Participatory Sensing Applications: A Survey. H. Mousa, S. B. Mokhtar, O. Hasan, O. Younes, M. Hadhoud, and L. Brunie. Elsevier Computer Networks. 2015.

Website address of the personal page : https://perso.liris.cnrs.fr/omar.hasan/

Supervisor's email : omar.hasan@insa-lyon.fr

Description of the research work proposed for a PhD ***Topic # (see list) :*** I-12

Title : Machine learning for trustworthiness-based lending between individual users

Subject :

Machine learning has been used recently in a number of applications that benefit from data analysis, such as speech and image recognition, spam filtering, chat bots, etc. Machine learning is an area of Artificial Intelligence in which a system automatically improves the quality of its inference capabilities based only on new data and without the need for explicit algorithmic enhancements by the programmer. The topic of this thesis is to develop and evaluate machine learning based approaches for establishing the credit trustworthiness of users in decentralized user-to-user lending. Decentralized lending platforms such as SALT, WeTrust, and Everex have recently emerged that enable users to borrow funds or invest in loans in a user-to-user manner. An open issue that requires study in the area of decentralized user-to-user lending is the requirement of collateral from users by such platforms. Machine learning has the potential to eliminate collateral-based lending and replace it by trustworthiness-based lending, where trust is established from the analysis of a large set of user data.

Keywords :

Machine learning, Artificial intelligence, Trustworthiness, Credit

Expected collaborations :

The PhD student will be a member of the IRIXYS international research center (http://www.irixys.org/) at INSA Lyon. As part of this center, the student will have the opportunity to collaborate with the computer science laboratories at the University of Passau (Prof. Harald Kosch) in Germany and at the University of Milan (Prof. Ernesto Damiani) in Italy. The student will take part in two workshops organized by the center each year that are held alternatively in France, Germany, and Italy.

Background required from the applicant :

Strong background in computer science.

Existence of a PDF file detailing the proposal ("yes" or "no") : *(see guidelines on the website www-csc.utt.fr)*	no