Conférencier invité 8 Mars 2019

par

Eric T. Matson

Purdue University, West Lafayette, IN, USA

ematson@purdue.edu

Title: Development of Self-organizing Counter Autonomous Systems with the HARMS Integration Model

Titre: Modèle HARMS pour la mise en œuvre d'une l'Intelligence artificielle distribué et auto-organisée dans les domaines de la sécurité, l'assistance à la personne et l'agriculture

Abstract: The future in the enhancement of cyber-physical system and robotic functionalities lies not only in the mechanical and electronic improvement of the robots' sensors, mobility, stability and kinematics, but also, if not mostly, in their ability to connect to other actors (human, agents, robots, machines, and sensors HARMS). The capability to communicate openly, to coordinate their goals, to optimize the division of labor, to share their intelligence, to be fully aware of the entire situation, and thus to optimize their fully coordinated actions will be necessary. Additionally, the ability for two actors to work together without preference for any specific type of actor, but simply from necessity of capability, is provided by a requirement of indistiguishability, similar to the discernment feature of rough sets.

Once all of these actors can effectively communicate, they can take on group rational decision making, such as choosing which action to take that optimizes a group's effectiveness or utility. Given group decision making, optimized capability-based organization can take place to enable human-like organizational behavior. Similar to human organizations, artificial collections with the capability to organize will exhibit emergent normative behavior. In this session, we will show how these models are applied to real world problems in security, first response, defense and agriculture.

Biography: Eric T. Matson, Ph.D., is an Associate Professor in the Department of Computer and Information Technology in the at Purdue University, West Lafayette. He is a Purdue University Faculty Scholar and member of the Board on Army Science and Technology for the National Academies of Science, Medicine and Engineering. Prof. Matson was an International Faculty Scholar in the Department of Electrical Engineering at Kyung Hee University, Yongin City, Korea. He was also formerly a Visiting Professor with the LISSI, University of Paris Est, Paris, France, Visiting Professor, Department of Computer Science and Engineering, Dongguk University, Seoul, South Korea and in the School of Informatics at Incheon National University in Incheon, South Korea. He is the Director of the Robotic Innovation, Commercialization and Education (RICE) Research Center, Director of the Korean Software Square at Purdue and the co-founder of the M2M Lab at Purdue University, which performs research at the areas of multiagent systems, cooperative robotics and wireless communication. The application areas are focused on safety and security robotics and agricultural robotics and systems.

Prior to his position at Purdue University, Prof. Matson was in industrial and commercial software development as a consultant, software engineer, manager and director for 14 years. In his software development experience, he developed and lead numerous large software engineering projects dealing with intelligent systems, applied artificial intelligence, distributed object technologies, enterprise resource planning and product data management implementations. Prof. Matson has a Ph.D. in Computer Science and Engineering from the University of Cincinnati, M.B.A in Operations Management from Ohio State University and B.S. and M.S.E. degrees in Computer Science from Kansas State University.