

Rapport de Stage

Heudiasyc, Université de Technologie de Compiègne (du 27/05/2018 au 10/06/2018)

Au cours de mon séjour scientifique avec l'équipe RO (Réseaux et Optimisation) dirigée par le Prof. BOUABDALLAH Abdelmadjid, j'ai finalisé deux travaux de recherche que j'ai soumis à des revues internationales et dont les résumés sont présentés ci-après :

- **Context-Aware Negotiation, Reputation and Priority Protocols in Traffic Light Using VANET for Smart City**
 - **Résumé** : The traditional transportation system is based on a fixed-timed strategy to control the traffic congestion on urban roads. However, this solution is proving useless today due to increase of vehicle density in a smart city, which implies the variation and the conflict on the demand pattern of the drivers. The smart city development requires us to create an efficient control plan for an intelligent traffic management system. In this paper, we aim to reduce the congestion at signalized intersections, and satisfy the needs of drivers according to their degree of displacement urgency. We use two optimization methods, namely the synchronization and the genetic algorithm (GA). Here, we develop three scheduling protocols, the first is the intelligent context-aware negotiation protocol (ICANP). This protocol allows the negotiating vehicles to cross the intersection. It enables each traffic light at the signalized intersection to negotiate the green time assigned to its phase. The ICANP uses the GA to optimize the crossing time in order to minimize the total waiting time of negotiating vehicles. Moreover, we introduce a negotiation protocol based on reputation (NPBR), which minimise the congestion effect from incoming dishonest vehicles. Finally, we propose an intelligent context-aware priority protocol (ICAPP), that considers the existence of priority vehicles. Upon arrival of at least one priority vehicle at the signalized intersection, the ICAPP interrupts the green time of negotiating vehicles. The experimental analysis showed that ICANP, and NPBR reduce the total waiting time of negotiating vehicles with, and without dishonest vehicles compared to circular case. Moreover, ICAPP increases the total waiting time of negotiating vehicles with presence of some priority vehicles.
 - *Soumis à la revue « Journal of Vehicular Communications »*
- **Context Aware Pseudonym and Authorization Model Based on Trust, Context and Role in Smart Hospital**
 - **Résumé** : Smart hospital is a healthcare infrastructure that uses IoT technology. This intelligent space allows to collaborate a several health actors via their IoT devices. This coordination improves the quality and continuity of health services for better patient care. However, uncontrolled access to patient information can disrupt the smooth running of hospital services. In this paper, we aim to secure the information of patient exchanged and shared, using the privacy and access control based on the context. We develop two protocols, the first is a context-aware pseudonym service. It protects the patient's personal and health information in two smart space hospital and home. Furthermore, we prevent the disclosure of the patient's location during his hospital stay. The second is an authorization and delegation protocol based on trust, context and role. It oversees the actions and interactions of health body with the smart bracelet object of patient. Our protocol uses the context to generate a set of roles with their trust values. Only one

role is activated if its trust value is greater than or equal to a trust threshold. A dynamic delegation mechanism is created to better manage the interactions between health bodies. We demonstrate through the practical analysis as well as generation time overhead, storage overhead and response time requirement the efficiency and robustness of our proposed protocols.

– *Soumis à la revue « Journal of Medical Systems »*

Durant ce séjour, nous avons également défini un plan de travail à long terme sur la thématique du transport intelligent qui va faire l'objet d'une thèse codirigée par le Prof. BOUABDALLAH Abdelmadjid et le Dr OMAR Mawloud, et nous avons discuté des possibilités de montage de projets de recherche.

Dr OMAR Mawloud

