

## **Data Analysis Frameworks for Patients Monitoring and Assessment in Connected Healthcare Applications**

In HOME, at work, in schools, our bodies are the target for hundreds of diseases and viruses. This leads to significantly increase the number of patients as well as the healthcare costs to governments and societies. Therefore, in order to deal with the increasing number of patients, integrating new technologies in healthcare monitoring and assessment to reduce the medical worker's cost and ensure a near patient-doctor interaction has become an essential for hospitals nowadays. Among other technologies, researchers have focused on wireless body sensor network (WBSN). Indeed, WBSN consists of a group of sensors that are located in and on the patient's body where each of which collects data for one vital sign (heart rate, systolic blood pressure, body temperature, oxygen ratio, respiration rate, etc.), the sensors are equipped with autonomous power batteries but with limited capacities. Finally, the doctors are responsible to check and analysis the data in order to make the ultimate decision. In my thesis, I addressed the issue of energy consumption and big data analysis in WBSN from one hand and the nurse-patient scheduling in other hand. First, I proposed data management techniques for data collection based on the aggregation of the data sent or reducing the frequency of sending. Second, I studied the evolution of the patient's behavior and the prediction of his future situation, based on his current situation. Finally, I built scheduling techniques that allows each nurse to determine her group of patients and specify the best conditions for their care.