

Abnormal activity detection in real-time RFID data

Program: Ph.D. in Engineering

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Project Description:

Technologies based on radio frequency identification (RFID) have recently become a key component of several important applications related to safety, logistics, retail, and business intelligence. Among these technologies, real-time location systems (RTLS) based on RFID, which can identify, locate and track resources in real-time, show a great commercial potential. However, such technologies also bring significant scientific and technical challenges, due to the large amount of data continuously generated in real-time, exceeding the storage, management and analysis capacities of current technologies.

The goal of this project is to improve the commercial value of RFID-based RTLS systems by introducing efficient and scalable methods to analyze and detect abnormal patterns in real-time RFID data. In order to meet the scalability, repeatability and adaptability requirements of large-scale, open and dynamic environments, novel methods based on latent semantic analysis and ensemble learning will be investigated. Unlike existing approaches, these methods will enable the discovery of high-level patterns that are not directly observable in the raw data streams. To evaluate their usefulness and efficiency, the proposed methods will be tested in real-life applications related to the monitoring of employees in hospitals and airports.

Contact:

- Prof. Christian Desrosiers (christian.desrosiers@etsmtl.ca)