

Offers

Ph.D. and M.Sc positions in Data Security and Privacy Assurance (C-IoT/ Ethical AI/ Blockchain).

Synchromedia Lab in partnership with CRIM and LabVI is carrying out research on data security and privacy on context of IOT and C-IoT distributed platforms.

The aim is to highlight the most important challenges regarding data security and privacy, provide a guide for good practice, and resolve data traceability and ownership issues exploring the use of blockchain.

Students who are already enrolled in a master or a PhD in their universities can benefit from these internships, **given a co-supervision agreement setup.**

This is a call for applications under MITACS/ LabVI (ETS, QI, Videotron, Ericsson) / CRIM partnership. Send your application to the contact below.

For further information and application contact: [**darine.ameyed.1@ens.etsmtl.ca**](mailto:darine.ameyed.1@ens.etsmtl.ca)

For more additional details, please see the description below.

Description of Proposed Research

Project title: Data Security and Privacy Assurance at LabVI

Research Context

LabVI is a multi-partnership living lab set up on “Quartier d’innovation” at Montreal to support the concept of “smart living”. In fact, the lab focusses on real life experimentation, sensing technologies, smart-application, distributed computing, smart platforms, IOT and CIOT, etc.

LabVI builds a distributed platform of ubiquitous sensing, heterogeneous network infrastructure, and intelligent information processing systems around smart living paradigm.

The platform gathers a huge amount of information and data. Consequently, it brings an abundance of security and privacy threats. For example, the huge amount of information collected could be used in individual profiling. Thus, new safeguards for privacy and data integrity must be specified. Privacy issues include mainly:

- Data Ownership
- Data Transparency and Auditability
- Fine-grained Access Control

Research challenges and goals

This proposed research aims to highlight the most important challenges in LabVI context regarding data security and privacy, provide a guide for good practice, and resolve data traceability issues by exploring the use of new technologies such blockchain. The purposes of this research are as follows:

1. Assessment of the state of the art of data protection standards, security protocols, privacy politics and regulation and ethical charters.
2. Assessment of privacy, security and traceability challenges and standards in IoT and CIOT context.
3. Identification of critical factors required for the specification and implementation of a privacy assurance in the context of LabVI with several use cases on different levels of the platforms.
4. Validation of a new data traceability and trust building for privacy assurance tools using blockchain.

Our general objective is the creation of a set of guidelines, tools and technologies to ensure data security and privacy and answer related ethical issues in the context of LabVI.

This general objective will be broken down into the following sub-objectives:

- G.1: Survey the state of the art of data protection standards, security protocols, privacy politics and regulation and ethical charters, to:
 - Highlight the best practices to adopt.
 - Provide guidelines on data security and privacy, regulation and ethical charter to adopt between the partners in LabVI and different participants.
- G.2, G.3, G.4: Based on the lessons learned from G.1, the interns will explore the specification and implementation of new guidelines, protocols and technologies to ensure data security and privacy during the data collection, data processing, and data distribution phases in distributed IoT platforms.
- G5: The intern will identify the best trade-off between various proposed guidelines, protocols and technologies in G2, G3 and G4.