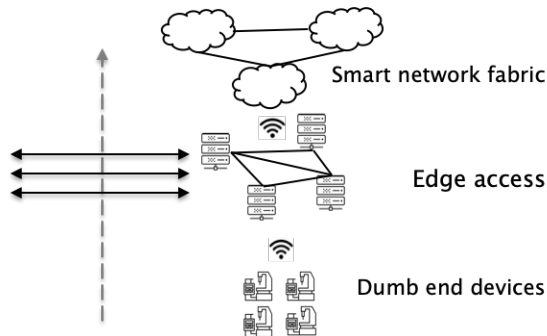


# Sirris Internship (ULB)

## Lightweight distributed intelligence on the edge

### 1. Internship description



Artificial Intelligence is moving from off-line and central in the cloud to near real-time and near real life on the edge. Edge computing has the potential to reduce the volume of data that must be moved and reduce overall traffic thanks to massively parallel and distributed architectures. It shortens the distance that data must travel thus decreasing communication latency and

transmission costs. The distribution of compute-intensive tasks to local resources increases the scalability and leads to considerable improvements in response times for real-time critical applications.

The goal of this internship is providing a solution by employing distributed intelligence mechanisms for energy- and resource-efficient planning, deployment and run-time adaptation of AI-based edge computing applications. The envisioned approach focuses on scaling of AI-based edge computing applications, through their orchestration and distribution among the existing edge infrastructure.

This will empower edge computing to provide real-time processing and analytics capabilities near the point of use and source of data and will significantly reduce the need for the expensive and relatively slow connection to the cloud as a bottleneck to analysis, especially when it comes to large volumes of data for AI applications. Data collection, machine learning and inference tasks of AI applications can be distributed in a federated architecture.

Relevant building blocks that could be foreseen are:

- Distributed analytics & decentralized data management on devices with limited computational resources
- Algorithms and mechanisms for energy-efficient and resource-efficient deployment and run-time adaptation of IoT and edge computing applications
- Lightweight security, secure data protection & privacy-preserving techniques in view of federated data sharing

### 2. Practical Details

We assume the student has basic knowledge about data analysis techniques or security principles.

The internship is not paid and takes place in Sirris premises in Brussels (Bluepoint, Boulevard A. Reyers 80, 1030 Brussels) or at another agreed working facility. Sirris has an informal and social working environment with flexible office hours. English will be the main working language.

Sirris is a non-profit and industry-driven knowledge center founded by Agoria, the federation of the Belgian technology industry. Sirris helps Belgian companies in the implementation of technological innovations, by providing companies with technological advice, by supporting companies in the definition and realization of innovation projects, and by setting up and participating in European R&D projects. Sirris is active in several domains, among which Software Engineering and ICT.

### **3. Contact information**

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