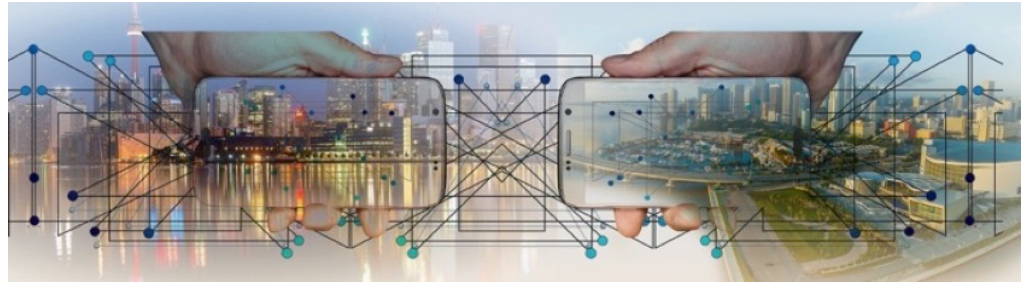
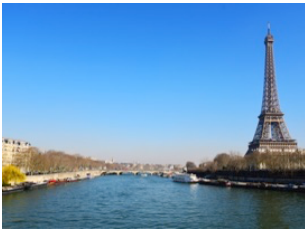


3 - 7 July 2023

UNINOVIS University Summer School

Blended Intensive Programmes (BIP) in IoT, Computer and Data Sciences, IA and Networking



BIP number: 2021-1-FR01-KA131-HED-000003168-1

Date: 3 – 7 July, 2023

The virtual component will take place from 26 to 30 June, 2023.

The physical component will take place from 3 to 7 July, 2023.

Course aim: to apply theoretical knowledge and practical skills in the field of IoT systems and its applications.

ECTS credits: A certificate of attendance and 3 ECTS (European Credit Transfer System) credits will be awarded upon the completion of the programme.

Target group: The Summer School is open to MSc and PhD students who are interested in IoT systems and its applications. A good command of the English language is essential. **For labs, students must use their PC.**

Enrolment deadline: 20 May, 2023



<https://forms.office.com/e/AbdMaeSQEU>

BIP Description

This is the first edition of the BIP UNINOVIS Summer School, whose idea is to involve students coming from Europeans partner universities. The teaching program is proposed in collaboration with our European partners and countries associated at the UNINOVIS DATA for LIFE.

This first edition focuses on a current topic that concerns the Internet of Things (IoT) and the smart campus.

IoT can significantly contribute to sustainability efforts by enabling monitoring and optimization of energy and resource use in various sectors, such as transportation, manufacturing and building management. While IoT can play an important role in sustainability efforts, it is not a silver bullet. The sustainability benefits of IoT will depend on how it is implemented and integrated into existing systems, and it is important to consider the potential environmental and social impacts of IoT technologies as they are developed and adopted.

Student profile

This intensive week is open to master's and doctoral students who are interested in IoT systems and their applications (smart campuses, smart cities, etc.), and with basic knowledge in the following disciplines

- Computer Science
- Applied mathematics
- Artificial intelligence
- Engineering
- Computer networking
- Data Science
- or similar

Different lab courses will be organized. Students must bring their own PC.

- Basic knowledge needed in computer science: C programming (python even better) and operating systems (Linux).
- Basic knowledge desired: In networks (Internet, protocols), IoT (Internet of Thing), et virtual machines.

BIP Objectives

This BIP will allow about 20 students to live a collaborative and multicultural experience linked to a real current technological issue, such as IoT systems and their application. Each student will have the opportunity to mix with students from other European countries and to confront their skills and methods.

The BIP has several objectives:

- To learn IoT technologies regarding the entire data processing chain: data collection, transmission and analysis for IoT applications.
- Complement theoretical knowledge with practical skills in the field of IoT systems and their applications.
- Development of a mini-project to implement a reflective activity on the sustainability aspects of using such technologies.
- Sharing knowledge of students from different training and levels (Master and Doctorate) in Europe.

Trainings

The teaching methods will be varied: lectures, workshops, poster sessions and oral presentations to allow for a multicultural experience in an individual and collective way.

Students will be required to work in groups from different countries in order to use their diverse skills. This experience will allow them to put forward their know-how and posture in a context of working together in English - a language that is not the mother tongue for most of the participants.

Implemented:

- Basic courses concerning will be given in distance learning: introduction to data science, AI analysis tools and instructions for the group project.
- A poster session is organized on Tuesday July 4th morning, allowing each student to present his or her background, research work (for PhD students) or internship project (for Master students).
- Organization of work in intercultural groups for the group project during the week. The idea of the group work is to highlight how IoT can contribute to sustainable development efforts by enabling improved data collection, analysis and decision making, resulting in more efficient use of resources and reduced environmental impact.
- Each group presents their work in a plenary session on the last day.

Preliminary Agenda

The Summer school is organized by following a BIP (Blended Intensive Programmes) format, with a virtual and a physical component.

Virtual component

Visio sessions on Teams will be held in June for students to get acquainted with the planned activities.

Preparatory modules will be outsourced online in June 2023, with 6-8 hours and three mini-courses related to these preliminary topics: introduction to data science, AI analysis tools, and instruction for the group project.

Modules:

Welcome and instruction for activities and group project

Kakfa-ML Tutorial – Cristian Martin - UMA

Traditionally, most of the ML/AI frameworks, which are behind the design and development of ML/AI algorithms, have been designed to work not with data streams like those in real-time generated by the IoT, but with persistent datasets and static data. Even nowadays, popular Python frameworks such as PyTorch, Theano, and TensorFlow provide, at the most, only partial support for data stream systems like Apache Kafka, the most popular data stream system. This does not merely include training of ML models, but also the rest of the steps that may be part of an ML/AI pipeline, such as ML model comparison and inference for production environments. In this talk, we will describe Kafka-ML, a novel and open-source framework that enables the management of ML/AI pipelines through data streams. Kafka-ML provides an accessible and user-friendly Web user interface where users can easily define ML models, to then train, evaluate, and deploy them for inferences.

Introduction to Data Analyses – Salvador Ruiz Correa – Mexico

Physical component:

	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
	2th july	3th july	4th july	5th july	6th july	7th july
8h30 - 9h00		Breakfast	Breakfast	Breakfast	Breakfast	Breakfast
9h00 – 10h45		Course: "Early design of Internet of Things networks towards real deployment" – Alessandra RIZZARDI (INSUBRIA)	Poster session	Lab-IoT: practice for basic networking for IoT Nadjib ACHIR (USPN)	Cros-functional aspects for IoT	To be defined soon
11h00-12h30		Course-Lab IoT: "Early design of Internet of Things networks towards real deployment" – Alessandra RIZZARDI (INSUBRIA)		Lab-IoT: practice for basic networking for IoT Nadjib ACHIR (USPN)	Project preparation	
12h30-13h45		Break for lunch	Break for lunch	Break for lunch	Break for lunch	Break for lunch
13h45-17h00	Expected arrival of students	Lab-IoT: event-driven programming tool – Alessandra RIZZARDI (INSUBRIA)	Course: Basic Networking for IoT – Khaled BOUSSETTA(USPN)	Social EVENT	To be defined soon	Final presentation for group projects
17h00-20h00	Welcome Reception	Dinner	Free time	Dinner	Free time	Closing session End of the school