

PROJECT PROPOSAL – FALL 2024

PROJECT MANDATORY 200 HOURS = 10 ECTS	
ENGINEERS 36 MONTHS – ALL TRACKS Data Science Internet of Things Digital Security Intelligent Communication Systems Embedded Systems	MASTER 24 MONTHS – ALL TRACKS Data Science Digital Security Internet of Things Intelligent Communication Systems
MASTER SECCLO – 12 MONTHS	
PROJECT MANDATORY 180 HOURS = 8 ECTS	
MASTER EIT DIGITAL – 12 MONTHS Digital Cyber Security Autonomous System	
PROJECT MANDATORY 100 HOURS = 5 ECTS	PROJECT NOT MANDATORY 200 HOURS = 10 ECTS
POST-MASTER 18 & 24 MONTHS Security in Computer Systems and Communications	CURSUS 6-12 MONTHS

**Please cross out any degrees or tracks that do not apply to your semester project.*

Name of supervisor(s): Karim Boutiba and Adlen Ksentini

If applicable: Name of industrial contact/company:

Number of students/group max.: 4

PROJECT TITLE: Towards Visual Inspection in 5G using XR glasses

PROJECT DESCRIPTION:

- ❖ For 100 hours project
- ❖ For 180/200 hours project (additional tasks)

Visual inspection is the first and most common technique used in the oil and gas industry. Malfunctions can be identified through close visual inspection by combining several techniques. Apart from being considerably flexible, visual inspection is the most intuitive, straightforward, and economical method for assessing the condition of industrial machinery. However, due to the limitations of visual inspection in detecting issues that are not immediately visible, inspections are typically carried out only after significant evidence suggests that a component of the infrastructure is not performing as it should. This delay can lead to significant risks for accidents and performance losses due to downtime.

In this project, we will start by connecting XR glasses, equipped with a Qualcomm 5G chipset, to a real 5G network based on the OpenAirInterface (OAI) platform [1]. We will design and implement an application that identifies objects in the environment using markers [2] and displays their status on the XR glasses. We will develop plugins that collect data from objects (e.g., industrial robots) and send it to the user. The latter will visualize the data on their XR glasses, augmented on the associated object. The application will also use this data to detect anomalies. Whenever an anomaly is detected, the user of the glasses will be notified, and the object will be highlighted in red, indicating that the object has encountered a problem.

Key words: XR glasses, 5G, OpenAirInterface (OAI), Python.