**Course Examination – Secure Internet of Things Applications**

1. Guided labs with reports (30%)
2. Implementation of an IoT System Project (70%)

The project involves the development of an IoT system responsible to perform human comfort measurement and movement detection. The intelligence/complexity of the IoT system is open and will be the responsibility of each team. The basic functionality will need to measure human comfort and at least 4 different human movement patterns furthermore it should detect falls and alert an authority (e.g. a hospital) to assist each person in danger.

The STM32 MCU will be used to collect and encrypt the measurements from the various available sensors. The data stored in the MCU and the data transmitted to the hub (emulated by matlab), must be encrypted using the AES library provided by the instructors. The Matlab implementation of the AES which was provided by the instructors will be used to decrypt the data in Matlab and plot them.

Then the security methodology presented during the lectures will have to be applied to the designed IoT system. Assets and threats should be provided and explained. Identify at least 5 security mechanisms and explain their protection capabilities. Analyze the vulnerabilities of the IoT application you have designed and draw a diagram showing them.

USE OF NEURAL NETWORKS IMPLEMENTED IN THE STM32 BOARD IS STRICTLY NOT ALLOWED

**Examination of the project in:**

* 1. **Specifications and functionality of the IoT system and Gantt Chart**
  2. **Implementation of IoT node system (STM32) and IoT Hub System (Matlab at the PC side)**
  3. **Security analysis**
  4. **Live demo and presentation**