Computational Models for Embedded Systems Laboratory Assignment 02



Assignment 2: Nucleo-F401RE

Assignment Objectives:

- Using Nucleo-F401RE.
- Modeling an embedded system



Theoretical aspects

Modeling an embedded system



Assignments

Problems

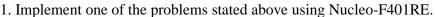
- Study the existing systems with the subjects (air humidifier, intruder detection, gardener, conveyor object detection).
 - Smart Air Humidifier (temperature, photodiode, distance, etc)
 - Smart Intruder Detection (pir motion, photodiode, etc)
 - Smart Gardner (soil moisture, temperature, photodiode, etc)
 - Smart Conveyor Object Detection (distance, buzzer, etc)
- Problem description: Describe your selected (only one) system in natural language.

Remark: Work in team of 4 members.

Prerequisite

- Study examples from
 - Laboratory 2

What to do





- 1.a. Without FSM model
- 1.b. With FSM model
- 2. Implement one of the problems stated above using LabVIEW.
 - 2.a. With FSM model

Turn in:

- Zip archive containing:
 - Project files for Problem description
 - The project created in Nucleo-F401RE containing the results from steps 1, 1.a and 1.b. a readme file with necessary comments/explanations. Specifically, the submitted archive should include:
 - o The Nucleo-F401RE projects (noFSM and withFSM)
 - 2 screen shots (red led on and green led on) of the running implemented system (your project using the Nucleo-F401RE board).
 - The project created in LabVIEW containing the results from steps 2, 2.a.

Assignment and Delivery date:



- 1. Assignment date: laboratory 2
- 2. Delivery date (first): laboratory 6 (maximal grade 450XP: 50 XP for noFSM, 150XP for with FSM, 250 XP for with FSM in LabVIEW)
- 3. Delivery date (last): laboratory 7 (maximal grade 220: 25 XP for noFSM, 70 XP for with FSM, 125 XP for with FSM in LabVIEW) if time available.

Remark: The solutions must be presented in class.