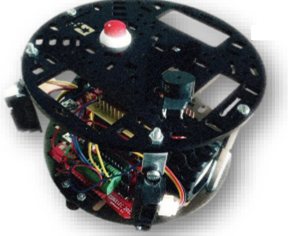
SAMBOT – Software Detail Design Requirements

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Introduction

SAMBOT is a tiny robot that is controlled by UART. It is composed of a master and a slave card. The first one controls the wheels depending of the information it receives from the second, which manages the sensors.

This document lists the requirements of the software architectural design.

Every requirement is composed of:

-One unique ID following this pattern: SAMBA\_XXX (Three digits).

-A name, which is always a small introduction of the requirement.

-A text, describing what is this requirement for.

SDDR\_001

Name: Detect Hole

Text: When the infrared sensor does detect a gap in front of the robot it shall launch Stop\_Wheels (SDDR\_005).

Covers: Fc5

Uses: SAMBA\_005 (Infra-red sensor)

Function: Detect\_Hole

SDDR\_002

Name: Detect Obstacle

Text: The ultrasonic sensor detects the obstacles in front of the robot, in a range of [-180°;180°]. The sensor shall send the range where there is no obstacle to the MSP430g2231. (Example of return: [-60;30])

Covers: Fc6

Uses: SAMBA\_006 (Ultrasonic Sensor)

Function: Detect\_Obstacle

SDDR\_003

Name: Turn servomotor

Text: When the robot is active, the servomotor shall turn back and forth, going from -180° to 180°.

Covers: Fc7, Fc11

Uses: SAMBA\_004

Function: Garen

SDDR\_004

Name: Move Forward

Text: The right and left wheels shall be activated into forward direction.

Covers: Fc1

Uses: SAMBA\_007, SAMBA\_008

Function: SB\_Forward

SDDR\_005

Name: Stop Wheels

Text: The right and left wheels speed are decreasingly set to 0.

Covers: Fc1

Uses: SAMBA\_007, SAMBA\_008

Function: SB\_Stop

SDDR\_006

Name: Turn the robot

Text: The robot shall turn on itself to face a direction where there is no hole forward and no obstacles are detected between [-30°;30°]. To turn to the positive side, SAMBA\_008’s speed shall be set to 20, and SAMBA-007’s speed shall be set to -20.

Covers: Fc14, Fc15,Fc1

Uses: SAMBA\_007, SAMBA\_008

Function: Turn\_Robot

SDDR\_007

Name: Emergency Stop

Text: If SAMBA-013 is pressed, the wheels’ speed shall instantly be set to 0.

Covers: Fc4

Function: Emergency\_Stop

SDDR\_008

Name: Detect servomotor’s angle

Text: At every time the robot must know the angle of the servomotor in function of how it was at the starting position.

Covers: Fc10

Function: Detect\_Angle

SDDR\_009

Name: Bluetooth connection

Text: The robot will receive

Covers: Fc20, Fc21

Function: Blutooth\_Connect