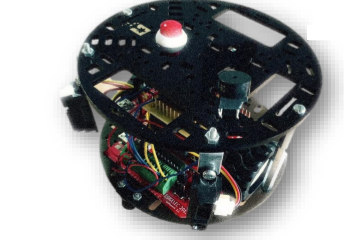
SAMBOT – Software Architectural Design Requirements

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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 receive 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.

Software Architectural Design Requirements

SAMBA\_001

Name: Master Card

Text: The master card manages the wheels. Use SPI and UART to communicate with a slave card and a Bluetooth card.

Covers: Fc18

Module: MSP\_430g2553

SAMBA\_002

Name: Slave card

Text: The slave card manages the sensors and one servomotor. It also communicates with the master card in SPI.

Covers: Fc18

Module: MSP\_430g2231

SAMBA\_003

Name: Bluetooth Card

Text: The Bluetooth card communicate with the Master card in UART communication. It receives commands from the User via Bluetooth.

Covers: Fc20

Module: RN42

SAMBA\_004

Name: Servomotor

Text: The servomotor is a module that support the SRF02 (US sensor).

Covers: Fc12

Module: HS-422

SAMBA\_005

Name: Infra-Red Sensor (IR)

Text: The IR sensor is used to detect obstacles and measure the distances to them.

Covers: Fc5

Module: GP2D120

SAMBA\_006

Name: Ultrasonic Sensor (US)

Text: The US sensor is used to detect obstacles and measure the distances to them. It is placed on the servomotor, facing forward.

Covers: Fc6

Module: SRF02 / SRF05

SAMBA\_007

Name: Right Wheel

Text: This is the right servomotor which commands the right wheel in both directions (forward and backward) setting speed to positive moves the wheels forward, setting it to negative makes it move backward.

Covers: Fc7

Module: S3003

SAMBA\_008

Name: Left Wheel

Text: This is the left servomotor which commands the left wheel in both directions (forward and backward) setting speed to positive moves the wheels forward, setting it to negative makes it move backward.

Covers: Fc7

Module: S3003

SAMBA\_009

Name: UART

Text: The UART is the connection between the Master card and the Bluetooth Card.

Covers: Fc19

Module: MSP430g2553, RN42

SAMBA\_010

Name: SPI

Text: The SPI connection is used to link the Master and Slave Cards. On the master card: clock P1.4, SOMI 1.1, SIMO 1.2. On the Slave card: clock 1.5, SOMI 1.6, SIMO 1.7.

Covers: Fc19

Module: MSP430g2553, MSP430g2231

SAMBA\_011

Name: Clock

Text: The Clock of Master Card is use as reference for the Slave Card.

Covers: Fc19

Module: MSP430g2553

SAMBA\_012

Name: Power

Text: When the user press on the power button the robot is activated or disable.

Covers:

Module: MSP430g2553

SAMBA\_013

Name: Emergency Buton

Text: A button which shall stop the robot immediately when pressed.

Covers: Fc4

Module: ?

SAMBA\_014

Name: Battery

Text: The alimentation of SAMBOT, fixed under it.

Covers: Fc3

Module: ?