Software Detailed Design Requirements

# Résultat de recherche d'images pour "sambot esigelec"Introduction

A small bot on wheels needs to be designed. It should be able to move itself in an environment containing obstacles.

The obstacles can be detected and avoided thanks to an ultrasound sensor placed on a servomotor (sweeping).

Holes must be detected too with an infrared sensor (to prevent falls).

This document lists all the **system requirements**, for the **software only.**

Every requirement is composed of:

* One unique ID following this pattern: SYS\_XXXXX (Five digits),
* A name, which is always a small introduction of the requirement,
* A text, describing what is this requirement for.

# Software Detailed Design Requirements

DDR\_00100

Name: Moving forward

Text: if the user turn on the bot, the motor drives the wheels.

Function: R\_avancer().

DDR\_00200

Name: Detect obstacle

Text: if the sensor detects something closer than 8cm then an obstacle can be considered detected, get\_distance\_ultrason shall returns 0, else it shall return 1.

Function: get\_distance\_ultrason()

DDR\_00210

Name: Sweep obstacle sensor

Text:

**If the servomotor rotates clockwise:**

If it hasn't reach 45° then it shall keep rotating clockwise else it should rotate counterclockwise.

**If the servomotor rotates counterclockwise :**

If it hasn't reach -45° then it shall keep rotating counterclockwise else it should rotate clockwise

Function: servo\_on()

DDR\_00300

Name: Detect hole

Text: if the sensor detects something closer than 900 then an obstacle can be considered detected, get\_distance\_infra shall returns 1, else it shall return 0.

Function: get\_distance\_infra()

DDR\_00600

Name: Bot start-up

Text: If the user send a command ‘1’ to the MSP430G2553, the variable on should be set to 1

Function: execute\_uart\_command()

DDR\_00610

Name: Bot stop

Text: If the user send a command ‘0’ to the MSP430G2553, the variable on should be set to 0

Function: execute\_uart\_command()

DDR\_00700

Name: Data stop display

Text: If the user send a command ‘2’ to the MSP430G2553, the variable log should be set to 0

Function: execute\_uart\_command()

DDR\_00710

Name: Data start display

Text: If the user send a command ‘3’ to the MSP430G2553, the variable log should be set to 1

Function: execute\_uart\_command()

DDR\_00800

Name: Make a 90 degree turn

Text: If the MSP430G2231 send to the MSP430G2553 that an obstacle has been detected then the motor drives the right wheels only.

Function: R\_tourner\_droite()

DDR\_00800

Name: Make a 180 degree turn

Text: If the MSP430G2231 send to the MSP430G2553 that a hole has been detected then the motor drives the right wheel and drive the left wheel in an opposite direction.

Function: R\_demi\_tour()