System 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 System Requirements

SYS\_0100

Name: Movement

Text: The bot shall be able to move in any direction (forward, backward, left and right).

SYS\_0200

Name: Obstacle detection

Text: The bot shall be able to detect obstacles towards him through an ultrasound sensor (SRF05 or equivalent). The ultrasound sensor shall be placed on a servomotor in order to scan obstacles around itself. The bot should avoid an obstacle when it detects one.

SYS\_0300

Name: Holes detection

Text: The bot shall be able to detect holes in front of him through an infrared sensor (GP2D120 or equivalent). The bolt should avoid a hole when it detects one.

SYS\_0400

Name: Hardware requirements

Text: The bot is based on an ESIGELEC electronic board, the wheels are controlled by an MSP430G2553 micro-controller and the sensors are controlled by an MSP430G2231. A computer shall be used to communicate with the bot.

SYS\_0500

Name: Communication protocols used

Text: The protocol used to communicate between the computer and the MSP430G2553 is UART (with a Bluetooth protocol on top of it), the protocol used to communicate between the MSP430G2553 and the MSP430G2231 is SPI.

SYS\_0600

Name: Bot start-up and stop

Text: The bot should be started or stopped by a command prompt on the computer.

SYS\_0700

Name: Data display

Text: The user should be able to choose whether or not he wants to display data given by the sensors on the computers command prompt.