SAMBot – Software System Requirements

# **Contents**

Contents 1

Introduction 1

Software System Requirements 2

Software Architectural Design Requirements 2

Software Detailed Design Requirements 5

# **Introduction**

A SAMBot that use two MPS430 microprocessor to connect the sensors and to transfer information. It can be connected with bluetooth and the robot can be controlled by the user who send commands from the bluetooth device.

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.

**System Requirements**

**SYS\_00100**

Name: Move

Text: The robot shall move when user presses the button.

**SYS\_00200**

Name: User Interface output

Text: The robot shall output all transaction and status information via the provided user interface

**SYS\_00250**

Name: Help

Text: The robot shall provide help and guidance to the user via the user interface

**SYS\_00300**

Name: Detect object

Text: The robot shall detect the object when user presses the button.

**SYS\_00310**

Name: Make a list of objects detected

Text: The robot shall make a list of all the objects detected.

**SYS\_00400**

Name: Save the data in database

Text: The robot shall save the list in the local database.

# **Software Architectural Design Requirements**

**HLR\_00100**

Name: Move forward

Text: The robot shall move forward when the “forward” button is pressed.

Covers: SYS\_00100

Module: Robot

**HLR\_00101**

Name: Move backward

Text: The robot shall move backward when the “backward” button is pressed.

Covers: SYS\_00100

Module: Robot

**HLR\_00102**

Name: Move left side

Text: The robot shall turn left when the “left” button is pressed.

Covers: SYS\_00100

Module: Robot

**HLR\_00103**

Name: Move right side

Text: The robot shall turn right when the “right” button is pressed.

Covers: SYS\_00100

Module: Robot

**HLR\_00200**

Name: Display when scanned

Text: When an existing object is scanned the robot application shall display a message

Covers:SYS\_00200, SYS\_00300

Module: Robot

**HLR\_00300**

Name:Help

Text: When the user is clicked the “help” button, the robot application will display the help interface.

Covers: SYS\_00200 SYS\_250

Module: Robot

**HLR\_00350**

Name: Scan

Text: The servo motor will rotate automatically when the user command on the button.

Covers: SYS\_00300

Module: Robot

**LHR\_00400**

Name: Detect the object

Text: When the “detect” button is pressed, the sensor ultrasonic will be activated.

Covers: SYS\_00300

Module: Robot

**HLR\_00500**

Name: Make a list in interface

Text: The robot application shall provide a message when the object is detected.

Covers: SYS\_00310

Module: Robot

**HLR\_00510**

Name: Save a list

Text: The robot application shall save the list at the end of session.

Covers: SYS\_00310 SYS\_00400

Module: Robot

**HLR\_00600**

Name: Start with empty

Text: When the robot application starts the list will be emptied.

Covers: SYS\_00100

Module: Robot

**HLR\_00700**

Name: Manage user interface session

Text: The robot application will start and maintain the User Interface session until it is ended

Couvre: SYS\_00200

Module: Main

# **Software Detailed Design Requirements**

**DDR\_00100**

Name: Move forward

Text: When the “Forward” button is pressed, the robot will move forward unless a object is close.

Covers: HLR\_00100

Function: avancer()

**DDR\_00120**

Name: move backword

Text: When the “Backward” button is pressed, the robot will move backward unless a object is close.

Covers: HLR\_00102

Function: reculer()

**DDR\_00130**

Name: move left side

Text: When the “left” button is pressed, the robot will turn left unless a object is close.

Covers: HLR\_00103

Function: tourner\_a\_gauche()

**DDR\_00140**

Name: move right side

Text: When the “Right” button is pressed, the robot will turn right unless a object is close.

Covers: HLR\_00101

Function: tourner\_a\_droite()

**DDR\_00150**

Name: Display the message

Text: If the object is detected, the robot application will show a message.

Covers: HLR\_00200

Function: display\_the\_message()

**DDR\_00200**

Name: Help

Text: The message will display the message help.

Covers: HLR\_00200

Function:Help()

**DDR\_00250**

Name: Activate the servo motor

Text: Activate the servo motor while user pressing the “Detect” button.

Covers: HLR\_00350

Function: scanner()

**DDR\_00300**

Name: Activate the sensor ultrasonic

Text: If the “detect” button is pressed, the sensor ultrasonic will detect the object in front of the robot.

Covers: LHR\_00400

Function: detectObject()

**DDR\_00350**

Name: Activate the sensor infrared ray

Text: If the robot is activated, the sensor infrared ray will be activated automatically.

Covers: SYS\_00100

Function: infrarouge()

**DDR\_00360**

Name: End application active state (idle state)

Text: If the end session key has been pressed and the robot application is in the active state then the robot application shall be placed in the idle state

Covers: HLR\_00700

Function: end()

**DDR\_00375**

Name: End application not active state

Text: If the end session button has been pressed and the robot is not in the active state then it will be ignored

Covers: HLR\_00600

Function: end()

**DDR\_00500**

Name: Show message

Text: When a object is detected, the IHM will provide a message to tell user that there is something in front of the robot.

Covers: HLR\_00200

Function: Message\_afficher()

**DDR\_00550**

Name: Show message in the list

Text: The message will be saved in the list of interface.

Covers: SYS\_00500

Function: Message\_add()

**DDR\_00600**

Name: startSession

Text: If a session is started, start session shall empty the list.

Covers: HLR\_00600

Function: startSession()

**DDR\_00700**

Name: save list

Text: The list will be saved unless the session is ended

Covers: HLR\_00510

Function: ListSave()

**DDR\_01200**

Name: End Session

Text: endSession shall empty the list.

Covers: HLR\_00700

Function: endSession

**DDR\_02000**

Name: Goodbye

Text: Goodbye shall inform the user via the UI that the robot application is terminating

Covers: HLR\_00700

Function: UI\_exit