SRS Document

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Chapter 1

Introduction

1.1 Purpose

The perpose of this document is to describe the requirement specifucation for a robot controlling software for software development team.
The intended audience of this document includes the prospective developers of the tool and the technical assessment personnel of the client organization.

1.2 Scope

The name of the software would be RobBot.

The RobBot will allow users to controll some very basic operations of a robot comes with the same package, which should have the capability to move, talk, understand very basic commands and environment situations.

The software could be used in any OS for PC as well as Android's latest versions. It would have capabilities for enhancing security and authentication systems for manager type users.

1.3 Definition, acronyms & abbrevations

- **RobBot:** Robotic Chat-Bot.

- **Activity:** nature of what is beign done, like analyzing, coding, testing, *etc.*

- **Artifact:** physical entity that results from an activity, like SRS, architecture diagram, UML diagrams, source code, test scripts, user manual

- **UAM:** user authentication module

- **DAM:** device authentication module

- **UM:** user module

- **MM:** manager module

- **AM:** action module

- **SRS:** software reqiurement specification

1.4 References

1.4.1 Standard

IEEE Std. 830-1993: IEEE Recommended Practice for Software Requirements

1.4.2 Books

Java The Complete Reference by Herbert Schildt
Understanding the Linux Kernel by D. P. Bovet & M. Cesati
Arduino Cookbook by Michael Margolis

1.4.3 Online links

`https://create.arduino.cc/projecthub/jeffpar0721/add-wifi-to-arduino-uno-663b9e`
`https://forum.arduino.cc/index.php?topic=283043.0`
`http://www.teomaragakis.com/hardware/electronics/how-to-connect-an-esp8266-to-an-ardu`

1.5 Overview

The rest of this document contains an overall description of the RobBot software system (Chapter-2), and the specific requirements for the system(Chapter-3).

Chapter 2

Overall Description

2.1 Product perspective

In many companies there is a huge need of some little physical chat-bot at critical time, so this item would help them a lot.

2.1.1 System Interfaces

The RobBot system to be developed is a stand-alone tool consisting of 4 modules described below. The systems on which the program would run will be

- Software Computer(Linux) & Android

- Hardware Arduino Genuino UNO

by default Java interface in each.

2.1.2 User Interfaces

The software has 4 modules,

- User Authentication Entry in the Software, by Registration & Logging in;

- Device Authentication Device searching, selection & connecting

- Basic Operations Basic movements with commands

- Advance Operations Artificial Intelligence using sensors, movements and commands & responses

The databse interface is out of the normal users, but only for Admins & developers.

2.1.3 Software Interfaces

The RobBot software would link-up with all devices required and start executing program.

2.1.4 Communication Interfaces

The communication sould be either serially or using WiFi network in the front-end & with the database in the back-end.

2.1.5   Memory constraints

quite big space (about 300MB for PC & 100MB for android)

2.1.6   Operations

The target operations would be Controlling the following,

- Authorising Security system

- Manage Users

- Robot's Actions

    - Movement Basic movements
    - Sense Analyzing sensors' data
    - Interprete Text to Speech and *vice versa*
    - Thiking Learning & intelligence

of the Robot.

2.1.7   Site adaptation requirements

No specific site adaptation is required.

2.2   Product functions

The two main function for this Software would be Authentication & manage users, and the other one would be to control over the Bot device & all the main features discussed before.

2.3   User characteristics

Users should be much familier with what they are doing. If they command the bot to do something that tries to break the rules of the Robots, the bot will not work accordingly.

2.4   Constraints

The device might be hacked and damaged by applying physical pressure on it.

2.5   Assumptions & dependencies

Not specified.

2.6   Apportioning of requirements

The connection issue between the software & the hardware.

Chapter 3

Specific Requirements

3.1 External interface requirements

All input into & output from software

3.1.1 User interface

ASCII character string in the Text Boxes

3.1.2 Hardware interface

ASCII characters & numbers one by one

3.1.3 Software interface

Both variable values & control informations

3.1.4 Communication interface

Software back-end: Database(MySQL commands), Bot(Specific ASCII commands made with RobBot protocols)
Hardware back-end: Arduino binary commands+values, serial values from connector device(esp8266 or direct connection from computer)
very reliable JDBC connector J connects the database with the software

3.2 Specific requirements

3.2.1 Data flow diagram

Attached

3.2.2 Class diagrams

Attached

3.2.3   Sequence diagrams

Attached

3.3   Performance requirements

The software depends on the compatibility of the java version in the main controller device where the software would be installed.
High speed connector technology WiFi & JDBC

3.4   Design constraints

The design is not completely bugless, as it would be developed in current computer technology, but in future some compatibility issue might come.
It can be resolved by version controlling

3.5   Software system attributes

3.5.1   Reliability

The software have to be highly reliable in the sense of users' information & the task it will be given to.

3.5.2   Availibility

The software have to be available 24×7 & only one user can access at a time.

3.5.3   Security

In future we'll use mCrypton that is easy to know, but not easy to hack to upload the users' information into the database.

3.5.4   Maintainability

This tast would be done by manager in client side & by developer team in implementors' side with proper version control.

3.6   Other requirements

Not specified.