SERPA (Sensor Enabled Robot for Personal Assistance)

Software Requirements Specification

Version 1.0

Prepared by:

Rajatha S Kunj (1JT13CS035)
Arjun J S Sastry (1JT13CS011)
Manohar K (1JT13CS026)
Pragathi Desai (1JT13CS034)

Guide:

Mr.Pruthvi Kumar K R
Asst Professor
Dept of ISE

Contents

Description

The SERPA(Sensor Enabled Robot for Personal Assistance) Software Requirements Specification provides a list and description of the functional and non-functional specifications for the software components of SERPA. It is supplemented by the SERPA Software Design Specification, the SERPA Software Test Plan which will be updated in the next version of the software requirement specifications .
The document is intended to establish the initial scope of the development effort.

Perspective

It is an attempt to promote AI and robotics research by providing a common task. This product is aimed at making the robot intelligent enough to assist a human without human controlling. However you can control the robot by computer if you want to. The interface of the controller perhaps is the key term if you focus on the robot controlling by human.

At its core, SERPA is a voice-activated personal assistant with thermal sensors. It listens for voice commands, provides quick answers to simple questions, and looks up information on command and turns on the light, fan and any specified device sensing the heat.

User Characteristics

User can verbally speak to SERPA using amazing speech to text technology and can speak back to you, using text to speech. Having speakers and microphones set-up in your house or room, SERPA is accessible simply by saying his name at any time.

Assumptions and Dependencies

SERPA can be controlled via voice recognition which is present on the computer app. The computer app works on Linux, MAC, Windows and Solaris so it is fully cross platform and will work for everyone. We are also to create a web application which is custom configured to your home and this web page can be accessed from anywhere in the world as long as your web server is running.

External Resource Requirements

The issues dealt with in this section of the document pertain to user and system requirements that affect the operation of SERPA within a given system or within a network context.

User Interface

The user interface is based on components created using Arduino IDE and a web browser. The user can set the defaults at the beginning on the web page and then communicate with SERPA as the user has defined it.

Hardware Interface

The hardware requirements for the project are

- Arduino board
- Light Sensors
- Heat Sensors
- A computer with a basic web browser

Software Interface

- Operating system: Windows
- Server: Apache
- Programming languages: Arduino IDE,html.

Communications Interface

The user interacts with SERPA using the client server architecture for voice recognition.

Software Development

We need to develop a software , a program rather using Arduino IDE and the web interface will be developed by using a simple program like html. A server interface must be created between the robot and the application for which the APACHE sever is used.

Functional Requirements

1. SERPA must take the voice commands as the input.
2. SERPA must talk back/reply for the inputs taken by the user.
3. External Interface is required. I.e the SERPA will be in contact with the user's home appliances.
4. It should maintain a historical data.
5. The user must authenticate once so that it is not misused.

Non Functional Requirements

This section lists Non-functional requirement. Non-functional pertain to any development factors that relate to the scope of the project or that can impact the development schedule for the product. This project uses Agile Method i.e., at each step the product is consulted with the user/customer for the further enhancement or improvement using his experience with the product.

1. Availability

SERPA is available for use after installation. A single installation package allows the user to install the software . Care is to be taken to develop the initial package of SERPA so that user can make use of this product to its fullest.

2. Security

Software security is the idea of engineering software so that it continues to function correctly under malicious attack.

3. Maintainability

The settings of SERPA can be modified using the web page later. If a patch or expansion is issued, the executable can be overwritten.