Rafeeq Design

Introduction

This document is going to give a design for Rafeeq design for creating a vehicle robot that will act as BA Electronic PET. Rafeeq functions are supposed to be:

1. It can navigate and move anywhere in some floor in Bibliotheca Alexandrina.
2. It has a camera for detecting people and objects.
3. It has a speaker for generating sound.
4. It has a microphone for recording audio from surroundings.
5. It has a screen for displaying information or symbols to user.
6. It has a LEDs reflecting states.
7. It can have some sort of laser light for pointing. (This point must be investigated for safety)
8. It has the ability to go for charging place (Auto-return to charging station without the need for frequent charging checking).
9. It can escort people to any places they want.

Hardware Components

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| HW Component | Purpose | Link |
| Arduino Uno | Microcontroller for controlling other electronic devices (sensors, LEDs, motors,… etc.) | [UNO R3 | Arduino Documentation](https://docs.arduino.cc/hardware/uno-rev3/) |
| ESP32 CAM Board | Camera module with ESP32 for taking photos and videos. | [ESP32 CAM Board WIFI+BLUETOOTH With OV2640 Camera Module | Makers Electronics](https://makerselectronics.com/product/esp32-cam-board-wifibluetooth-with-ov2640-camera-module) |
| ESP32-CAM-MB | Programmer Shield for ESP32 CAM Board | [ESP32-CAM-MB MICRO USB Download Module for ESP32 CAM | Makers Electronics](https://makerselectronics.com/product/esp32-cam-mb-micro-usb-download-module-for-esp32-cam) |
| Microphone | Sound recorder of environment and people | [Microphone Sound Detection Sensor 4 Pin | Makers Electronics](https://makerselectronics.com/product/microphone-sound-detection-sensor-4-pin) |
| Speaker | Sound generator | [Speaker 8Ω 0.5W | Makers Electronics](https://makerselectronics.com/product/speaker-8%cf%89-0-5w) |
| Screen | Display information and symbols | [OLED Display I2C 4 Pin 0.91″ – Unsoldered | Makers Electronics](https://makerselectronics.com/product/oled-display-i2c-4-pin-0-91%e2%80%b3-unsoldered) |
| LEDs | Display various states | [Yellow LED 5mm | Makers Electronics](https://makerselectronics.com/product/yellow-led-5mm) |
| Laser | Pointer to some location | [Laser Module 3V | Makers Electronics](https://makerselectronics.com/product/laser-module-3v) |
| Robot Chassis Kit | Rafeeq Body | [4WD DG008 Complete Mini Plastic Robot Chassis Kit | RAM Electronics website (ram-e-shop.com)](https://www.ram-e-shop.com/shop/ro-base-dg008-4wd-dg008-complete-mini-plastic-robot-chassis-kit-6682) |
| Distance Sensors |  |  |
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