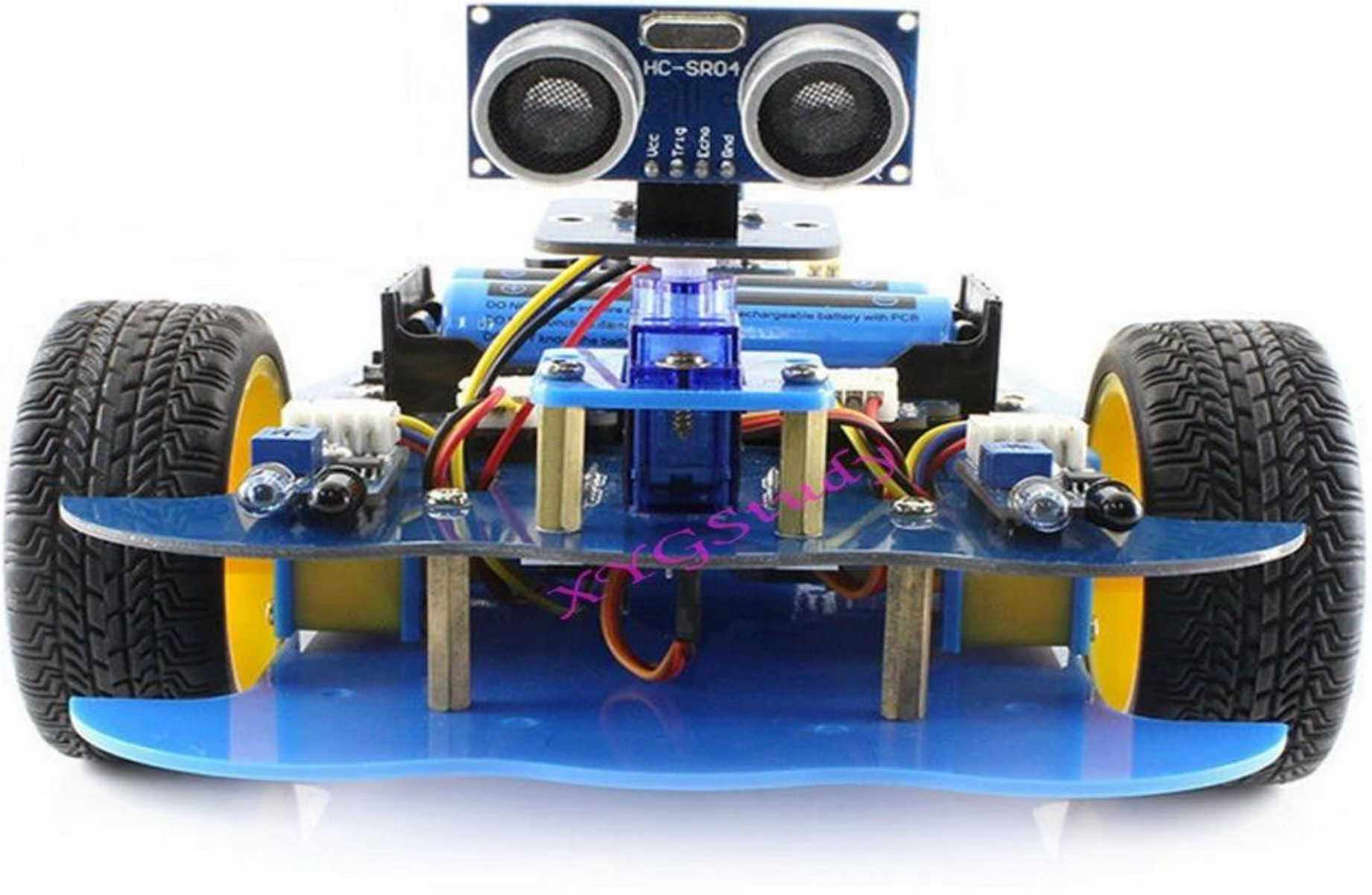

Autonomous Car

AMR MAHGOUB
KHALED EL SAYED

Project Outline

- Definition
- Overview
- Goals
- Components
- Advantages
- Challenges

Definition

An autonomous car is a vehicle capable of sensing its environment and operating without human involvement.

A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all. An autonomous car can go anywhere a traditional car goes and do everything that an experienced human driver does.

Overview

The proposed project is to measure distances using an ultrasonic module, similar to a bat. This module consists of two drums, one of which is an emitter that emits ultrasound and other is receiver which receives the reflected ultrasound from the object. Emitted ultrasound travels forward till it gets reflected by object and then travels backward. The reflected ultrasound is detected by the receiver and this time is stored in the microcontroller.

Goals

This project aims to implement a self-driving Car that can avoid the obstacles with very fast response:

1. Ultrasonic is placed on servo motor axis.
2. If the car found an obstacle, it must change its way according to the ultrasonic data.

Components

1- **Ultrasonic HC- SR04**

It’s used to determine the distance of the target object using a non-contact technology.

2- **Servo motor**

It’s used to control the robot wheels, producing plenty torque to move, start and stop the vehicle and control its speed.

3- **L293D**

It’s used to run a set of two DC motors at a time.

Components

4- **Motors**

It converts electrical energy into mechanical energy.

5- **Caster wheel.**

It allows the vehicle to move.

6- **Chassis**

It supports the load of the body.

7- **LCD**

It displays the distance.

Advantages

1- Greater Road Safety

2- Saving Money

3- More Productivity

4- Greater Independence

5- Reduced Congestion

6- Environmental Gains

Challenges

1- Ethical dilemmas

2- Sensing the surroundings

3- Unexpected encounters

4- Human-robot interaction

5- Cybersecurity

Thank you