Basic Electronics Lab Project 2021

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Project description:

We are making a small car which can be wirelessly controlled by our hand movements. We will use ultrasonic sensors to detect distance of our hand which will alter the speed of car accordingly. So, moving the hand vertically closer to the sensor will increase the speed and moving away(up) will decrease the speed. There will be sensors for right/left turns and brake as well which will get activated if they detect hand below a certain threshold distance. So, a proper hand and mind coordination will be needed to play with our car.

We will use two Arduino uno boards, one for sensing hand movements and another on the car. They both will communicate with each other using wireless transmitter and receiver. Moreover, the car will also have obstacle avoidance feature. It will detect obstacles in its way and avoid them (stop before hitting them). So, the car will not move if there is any obstacle even if the controller(person) asks it to by appropriate hand movements. This symbolizes accident-avoidance feature for actual cars. Such feature will avoid cars hitting each other and will avoid a lot of accidents especially in drink and drive cases.

Components required:

* Arduino UNO x2
* Dual H-bridge motor drivers L298N x2
* Ultrasonic sensors HC SR04
* 9V batteries
* Servo
* DC motors
* Battery holder
* L293D motor shield
* Wireless transmitter and receiver
* Buzzer
* Jumper Wires
* Wheel Kit and cardboard
* Breadboards

Some of these components do the exact same thing as some other (like dc motors and servo motors, and L293D & L298N), so we will use only one of them.

Budget:

All components that are required are available in our kits or in the lab except L298N motor drivers. So, if we use L293D (most probable) instead of L298N, our extra spending will be of wheel kit and cardboard. We have found a product on amazon which has 4 wheels, car frame, and motors. It is worth Rs 725. We are looking for a cheaper alternative though.

If we use L293D it will cost us approximate 2\*300= Rs 600 more.

So, our budget is **Rs 725**(most likely) or **Rs 1325** (both less than Rs 1500)