

Appendix I: Senior Design Project Abstract

Obstacle Avoiding Car Powered by Sunlight

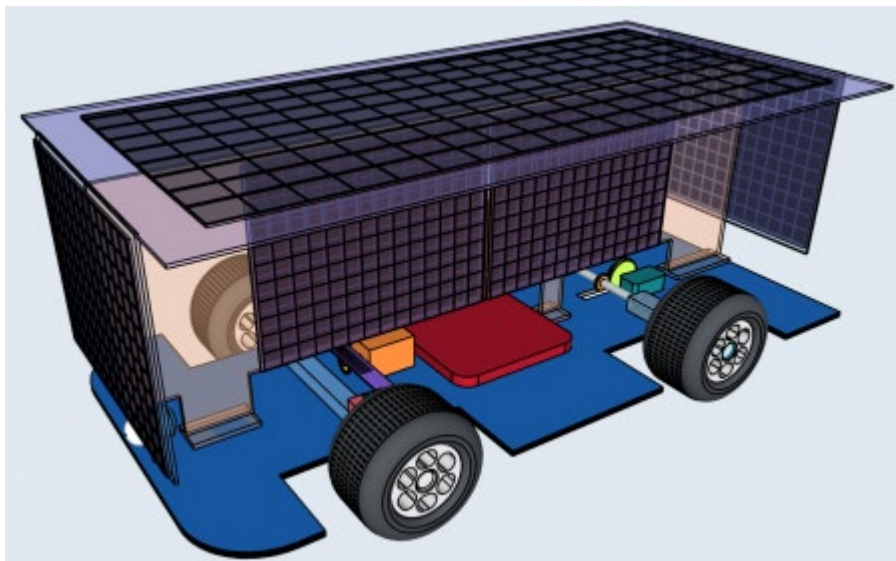
Product Description:

An obstacle avoiding car powered by sunlight which can move freely without colliding with surrounding objects.

Abstract: (less than 350 words)

The robot has the capacity to detect obstacles in its path based on a predetermined threshold distance. After obstacle detection, the robot can change its course to a relatively open path by making autonomous decision. The car requires no external control during its operation. It can measure the distance between itself and the surrounding objects in real-time. The robot is driven by direct sunlight and does not require batteries. The car should include a 3D printed chassis board with electric motors, wheels, screws, and wires. The car senses obstacles with an ultrasonic sensor mounted on the chassis. The brain of the car is an Arduino microcontroller. A solar panel is attached to the chassis to supply energy for the car to move.

There are no restrictions on the material of the parts, but the car should be strong enough to drive on uneven surfaces. The prototype should be easy to assemble with a hassle-free installation. The prototype weights less than 6 lbs. The prototype budget shall not exceed \$400 USD.



Deliverables:

The project design groups will be expected to deliver the mechanical system that address the above requirements described above and meets the following criteria:

Safety: Design shall not introduce or expose the operator to any hazards more than the current process.

Ergonomics: Using the tool shall not induce fatigue more than the current process

Durability: Solution must be capable of being operated for a minimum of 3 years before requiring maintenance or servicing.

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