Exploration project - Group 49

Density-based Traffic Controller System

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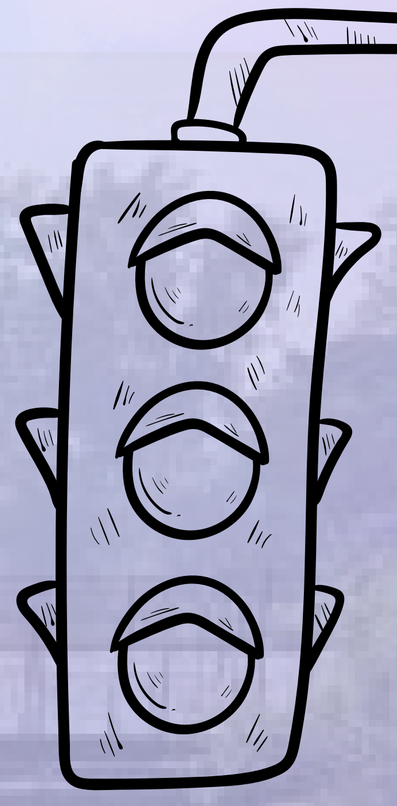
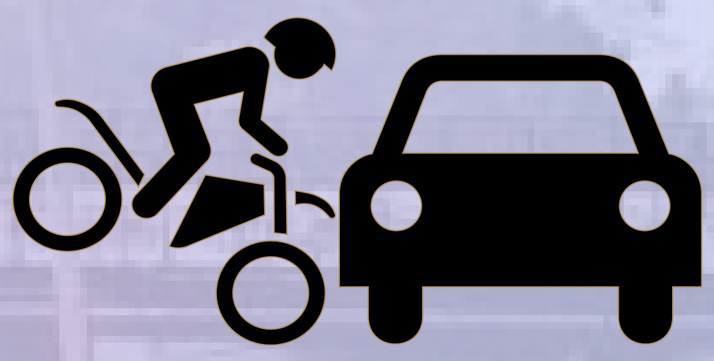
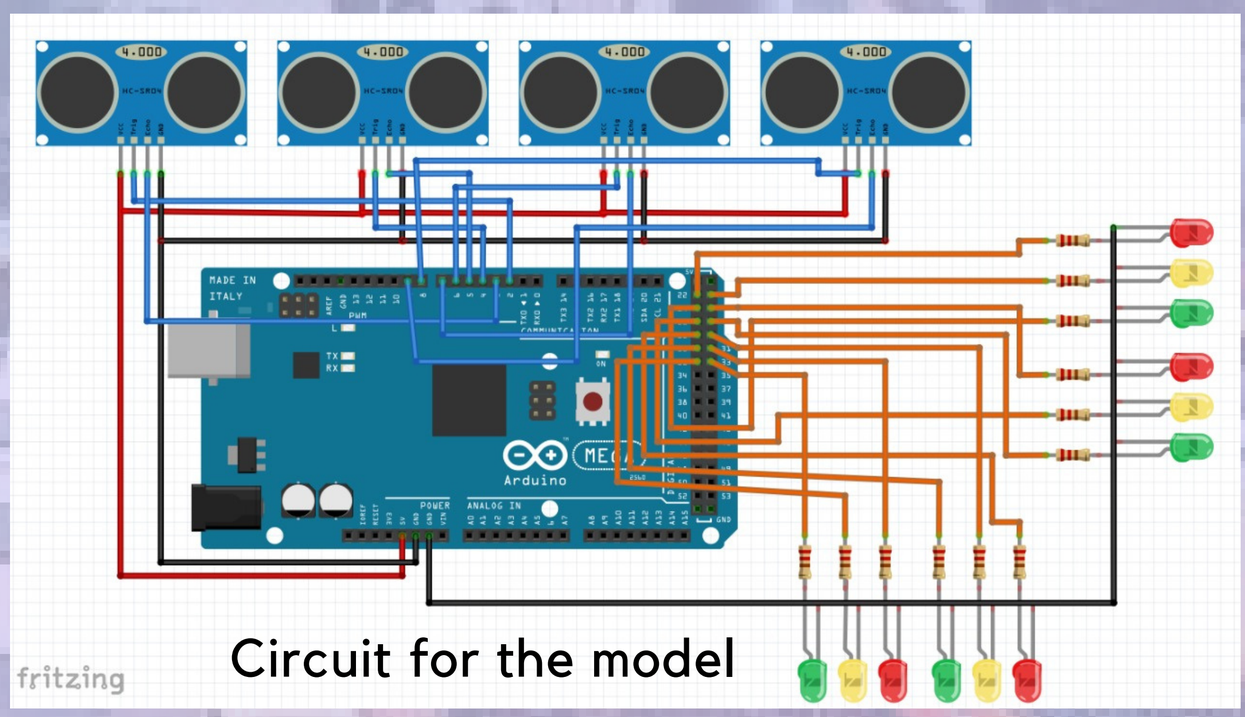


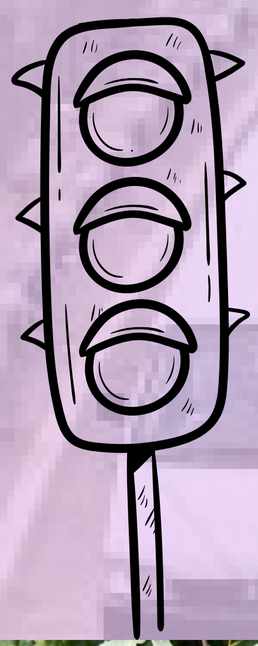


WHY THIS PROJECT?

We are familiar with the increasing traffic levels driven by modern demands, and we acknowledge the negative consequences of inadequately handled traffic, such as pollution, fuel consumption, time wastage, accidents, and more. Conventional traffic management systems frequently struggle to meet the necessary requirements. Thus, we propose the idea of a Density-based Traffic Controller System.

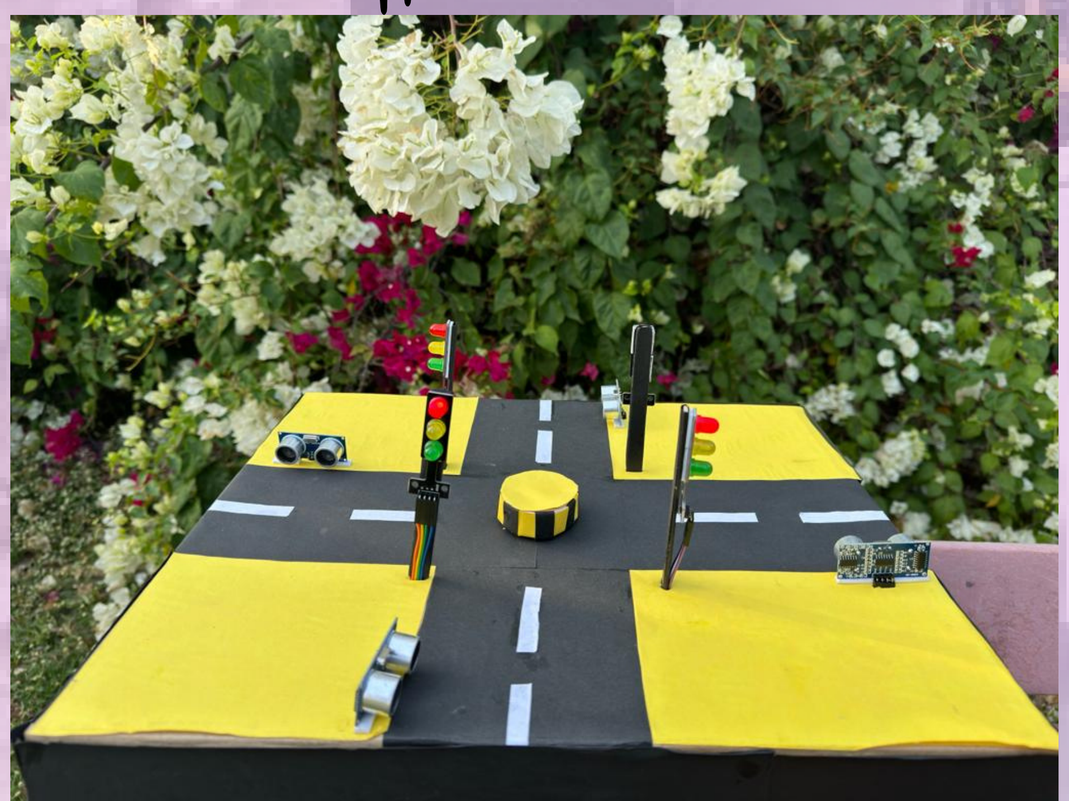


Circuit for the model



HOW IT WORKS?

The Density-Based Traffic Controller utilizes ultrasonic sensors strategically placed at intersections and road segments. These sensors continuously monitor the density of vehicles passing through their respective location. The control system analyses the incoming data to identify traffic patterns and determine the optimal signal timings for each intersection. By considering the current traffic density and prioritizing congested areas, the system dynamically adjusts the signal cycles and durations to maximize traffic flow and minimize delays.



Here, we have created a model which showcases our idea using Arduino Mega, Ultrasonic sensors, signal lights PCB, and other minor components. The ultrasonic sensors placed on the road which detect the density of the traffic present in their respective lanes. If they detect higher frequency of vehicles, the system made using Arduino will adjust the signal light to turn green for a longer time and thus efficiently manage the traffic.