Saving Lives with AFLOAT: Airbag Flotation Anti-drowning System

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Submersion causes the highest mortality rate of all vehicular accidents. These might be caused by crashing into a water body or by road flooding. Cars normally sink very fast, giving occupants very little time to escape. This research's objective is to install safety devices to allow vehicles to float in the surface of the body of water, giving occupants additional time to evacuate. External inflatable airbags were selected as the best option to increase the vehicle's buoyancy and prevent it from sinking. To evaluate the feasibility of this, alternative research was performed on the weight and dimensions of the most common passenger vehicles. Vehicular weight was used to calculate buoyancy, evaluating the required air volume on the inflatable airbags to displace the necessary volume of water to allow the car to float. Afterwards, the size of the required airbags was determined, evaluating the feasibility of its installation on the perimeter of the vehicle. It was determined that it is feasible to install inflatable airbags on the exterior of all the evaluated passenger vehicles to provide enough buoyancy for it to float in the surface of a body of water allowing occupants to evacuate. The size of safety airbags currently installed on the interior of vehicles would be similar to the proposed exterior inflatable flotation airbags, which indicates that the proposed solution in feasible. The future research will involve the evaluation of the best design and configuration of the airbags, allowing companies to have individual solutions for each of their models.

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