The Heat Free Car: Vehicular Heatstroke Prevention System (Second-Generation Prototype)

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On average, 37 children die each year from heatstroke when left unattended in a closed vehicle. Although there are many products available on the market to prevent heatstroke, they are mostly reminder systems and rely on human interaction. There are no devices that prevent severe dehydration, organ failure and death. I created the Vehicular Heatstroke Prevention System (VHPS) to prevent children and pets from succumbing to vehicular heatstroke. The VHPS is designed to automatically intervene by turning on the vehicle's air conditioning (a/c) unit to lower the temperature. The VHPS has a carbon monoxide (CO) sensor as a built-in safety feature. A microcomputer, Raspberry Pi, receives information from a series of sensors (carbon dioxide, CO and temperature) and turns on the vehicle's a/c unit via the car's OBD-II port. The housing for these components was printed on my homemade 3-D printer using CAD software. Experimentally, the VHPS was evaluated for its ability to detect life and breach of temperature thresholds, turn on the a/c unit, and communicate real time data with emergency personnel and caregivers via a customized mobile app which I developed. In testing, the VHPS successfully detected the presence of a person (myself), turned on the vehicle's engine and a/c unit at a preset temperature, and sent alerts, along with the GPS coordinates, to a designated smartphone and 911 (substitute number provided). The VHPS also successfully turned off the engine when CO was detected. The VHPS is designed to prevent future vehicular heatstroke deaths.

Awards Won:
Fourth Award of $500