The Buoy: A Novel Pool Alarm To Save Lives

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The Buoy is a state-of-the-art pool alarm that is designed to be user-friendly, reliable, cost-effective, and a safety layer to prevent childhood drownings. Design goals were ease of use, reliability, efficiency, visibility, cost-effectiveness, and safety. In addition, the Buoy must have an anchoring system so it remains stationary to increase its reliability. The hull is made of three main parts: lower, middle, and upper hull. The internals are a stack of electronic components. The battery is located in the lower hull with a rubber gasket that separates the main electronics from the battery compartment. The middle hull contains the stack of components consisting of a programmed Arduino Uno, a voltage regulator for the LED, and finally a custom circuit board with a gyroscope and accelerometer. The Buoy was tested by dropping objects similar in mass to a child into a pool. Once a wave is detected, a 4000 Hz alarm and 1000 lumen LED was activated. The gyroscope and accelerometer collect data of the Buoy's position, acceleration, and angle of tilt every 50 micro secs to detect waves created by a child falling into a pool. The Buoy is fully functional in its current state. It can detect waves accurately and reliably alert bystanders to a child falling into the pool. All design goals were met. The Buoy is easy to use. It detected every wave during testing. The Buoy has over a 24 hr battery life. The Buoy is easily visible when it's activated. The Buoy out-performs its competition in every way and surpasses all expectations on a price to performance ratio of less than $250. The Buoy's construction is designed to be simple but tough. The Buoy is an extra safety layer between children and death or injury. The Buoy will become a device known for its reputation to save lives.

Awards Won:

Second Award of $2,000