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Remote Bomb Detonation by Sea Turtle Inspired Robot

Background

Numerous countries worldwide are contaminated today with unexploded bombs, resulting in about 15,000 to 20,000 deaths every year and severely injuring countless more. Approximately 80% of these casualties are civilian, with children as the most affected age group. Further, these landmines render terrain unusable to local populations for farming, habitation and any human use.

Although landmines have now been banned in many countries, thousands still remain in the landscape from previous conflicts. Additionally, aging stockpiles of unused munitions still exist in some countries, and may become unstable over time. There is an ongoing need for an effective, low cost method to detonate these landmines such that the terrain is once again safe for human use.

Invention Description

Researchers in mechanical engineering, computer science and biology at Arizona State University have collaborated to invent a bio-inspired robot, named the C Turtle, that rasters across a war torn or military land area in a pre-programmed configuration to detonate explosive devices. This ensures that the area is safe for human occupancy and use. The robot has been designed to model the locomotion of sea turtles across varying terrains, such as sand or granular media, and operate in differing climates. The robot is designed with an algorithmic learning process which adapts itself to function across varying fin designs. The robot may detect the type of terrain its navigating, as well as environmental conditions, and selects from a series of protocols to minimize energy usage for a given condition.

Watch the ASU designed C Turtle move!

<https://asunow.asu.edu/20170525-solutions-asu-designed-c-turtle-robot-teaches-itself-get-around>

Potential Applications

- Land mine clearing worldwide for human use and farming

- Land mine clearing of former military zones

Benefits and Advantages

- Saves Civilian Lives – robot movement over the explosive device causes detonation, rendering areas safe for human use.
- Saves Explosive Ordnance Disposal (EOD) Officials' Lives – Despite years of experience, these individuals are placed in great danger when handling aging, and unstable unexploded ordnance.
- Saves the Lives of Refugees in War Torn Regions – refugees displaced from their homes due to war are at great risk upon returning home and to work
- Simple to Use – the robot may be programmed for a specific coverage pattern and remotely activated, without need for extensive human intervention.

[Dr. Ben Amor's Directory Webpage](#)

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