Literature Review:

Autonomous Legged Underwater Vehicle For Near Land Warfare

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Summary:

This process of creating Autonomous Legged Underwater Vehicles (ALUVs) that are specifically designed for mine hunting in the surf zone. These ALUVs are autonomous robots that are shaped like crabs and are relatively low-cost. They will be deployed in large quantities and operate independently, without centralized control. Together, they will systematically search a designated area for mines and obstacles, which will be located and destroyed.

In Phase I, we successfully demonstrated the feasibility of underwater legged robots with our Ursula ALUV, which was capable of walking underwater and detecting mines. We are currently in Phase II, where we are developing the Ariel ALUV. This new robot is optimized for faster, more efficient underwater walking, and improved mine detection.

Sensor:

Touch sensors:

ultrasonic

Tapping sounds

Electrical conductivity

Near vicinity sensors:

Magnetic

Eddy Current

Pros:

- Autonomous-legged underwater vehicles (ALUVs) can be deployed in large numbers and operate independently, which increases the efficiency of mine hunting in the surf zone.
- ALUVs are relatively low-cost, making them more accessible and cost-effective compared to traditional methods of mine hunting.
- The use of ALUVs reduces the risk of human injury or death in mine hunting operations, as the robots are the ones detecting and destroying the mines.

Cons:

- There may be limitations to the types of terrain that ALUVs can effectively operate in, as their design is specifically tailored for the surf zone.
- ALUVs may require ongoing maintenance and repair, which could increase their overall cost and require additional resources.
- There may be technical challenges involved in coordinating large numbers of ALUVs to systematically search a designated area without central control, which could impact their effectiveness.