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Low Cost, Autonomous Automatic Gun Shot Detection System

Background

One of the main problems that exists with protecting wildlife reserves and sanctuaries is effectively policing illegal poaching of animals. Current systems designed for this purpose are very expensive and use digital signal processing to try to match possible gunshot signals to existing masks. Due to the use of predetermined templates or masks, there are a lot of false positives produced. Current systems also require intensive hardware infrastructure that must be monitored at all times by a human expert, and require substantial ongoing maintenance costs.

Invention Description

Researchers at Arizona State University have developed a low-cost, autonomous, automatic gun shot detection system that runs on a small microprocessor. This invention is designed for long-term autonomous deployment in harsh natural environments. This invention uses the concept of deeper listening, which involves taking in and hearing the environment as a whole, and learning to use the sonic features which already exist within it to an advantage. This approach has proven effective in recognizing gun shots up to one mile from the source in the rainforest, and is not troubled by other background noises (e.g, rain, rivers, birds).

Potential Applications

- Effective detection of poaching on wildlife reserves or sanctuaries
- Remote land management (e.g., Third World countries, harsh natural environments)

Benefits and Advantages

- Autonomous - does not require ongoing maintenance
- Low-cost – does not require intensive hardware infrastructure
- Reliable – initial tests showed effectiveness in recognizing gun shots up to one mile from the source
- Robust – no interference observed from other background sounds (e.g., weather, animals)
- Long-term – can be used for long-term deployment