DEMO: A Remote Sensor Placement Device for Scalable and Precise Deployment of Sensor Networks

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ABSTRACT
The goal of this work is to develop a new autonomous capability for remotely deploying precisely located sensor nodes without damaging the sensor nodes in the process. Over the course of the last decade there has been significant interest in research to deploy sensor networks. This research is driven by the fact that the costs associated with installing sensor networks can be very high. In order to rapidly deploy sensor networks consisting of large numbers of sensor nodes, alternative techniques must be developed to place the sensor nodes in the field.

Figure 1 Prototype intelligent gas gun with magazine to hold 3 sensor packages.

To date much of the research on sensor network deployment has focused on strategies that involve the random dispersion of sensor nodes [1]. In addition other researchers have investigated deployment strategies utilizing small unmanned aerial helicopters for dropping sensor networks from the air. [2]. The problem with these strategies is that often sensor nodes need to be very precisely located for their measurements to be of any use. The reason for this could be that the sensor being used only have limited range, or need to be properly coupled to the environment which they are sensing. The problem with simply dropping sensor nodes is that for many applications it is necessary to deploy sensor nodes horizontally. In addition, to properly install many types of sensors, the sensor must assume a specific pose relative to the object being measured.

In this demonstration we will perform a contained, live demo of our prototype pneumatic remote sensor placement device along with some prototype sensor attachment mechanisms we are developing.

1. REFERENCES

1Los Alamos National Laboratory, PO Box 1663, Los Alamos, NM, USA 87544
2New Mexico Tech, 801 Leroy Pl, Socorro, NM, USA, 87801.