Licensable Technologies

Structural Health Monitoring

Applications:

- Defense hardware
- Civil infrastructure
- Manufacturing equipment
- Commercial aerospace systems
- Mechanical equipment

Benefits:

- Increases profits by detecting problems earlier
- Monitors structures subjected to large-scale discrete events such as earthquakes
- Reduces costs related to maintenance and inspection
- Prevents sudden and catastrophic failure by forecasting structural problems

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Summary:

The process of implementing a damage detection strategy for aerospace, civil and mechanical engineering infrastructure is referred to as structural health monitoring (SHM). Los Alamos National Laboratory (LANL) has developed an SHM process that involves the observation of a system over time using advanced sensing, processing, and telemetry hardware integrated with a novel data interrogation software package.

"DIAMONDII: Statistical Pattern Recognition Algorithms and Software for Structural Health Monitoring" is a software that consists of a collection of data interrogation algorithms and provides a graphical interface for the development of an SHM process. The software allows users to assemble existing routines to build their own SHM process. Based on a measured system, this monitoring system can autonomously decide whether or not a system has defects and locate the region of damage.

The proposed software can be used as a stand-alone package or can be loaded onto a single board computer providing SHM solutions to many different applications such as civil infrastructure, aerospace structure, and mechanical equipment. This SHM software enables customers to save a significant portion of maintenance cost by replacing defective parts and components only when necessary. It also helps end users efficiently compare different damage detection algorithms and build an application-specific monitoring system.

Development Stage:

Prototype testing. Beta evaluation version expected by summer 2005.

Patent Status:

Patents pending

Licensing Status:

We are seeking to license this technology either non-exclusively or exclusively for specific fields of use. We would also entertain offers to work collaboratively with companies to further develop the technology to add value and increase the licensability of SHM for all fields of use.

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