Fault-Tolerant NDE Data Reduction Framework, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)

ABSTRACT

A distributed fault tolerant nondestructive evaluation (NDE) data reduction framework is proposed in which large NDE datasets are mapped to thousands to millions of parallel, independent processes running on a mobile device, standard computer, or a networked cluster of machines. Each process scans a subset of the data for flaws and as independent entities are unaffected by errors in fellow processes or system failures. If a process fails, only its work is lost as the system continues to process the data; the work lost is immediately picked up by another process. The results of the parallel analyses are compiled back to the original dataset with structural flaw indicators. Phase I efforts are devoted to designing the framework and providing a proof of concept prototype able to automatically detect defects in NDE data.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: Potential NASA commercial applications include data reduction for aerospace inspection systems that generate terabytes of data and signal processing in microwave detection of water ingress in honeycomb structures such as radomes.

To the commercial space industry:

Potential Non-NASA Commercial Applications: Potential non-NASA commercial applications include face detection in security video for the DHS and TSA; aerial surveys used in law enforcement; and autonomous vehicle computer vision for the military and law enforcement.

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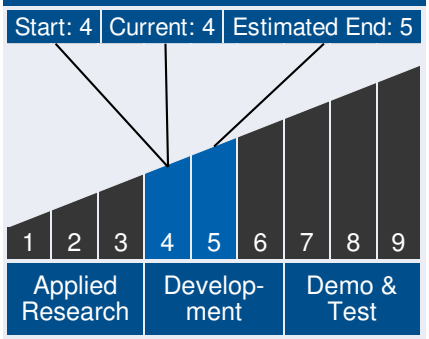
Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

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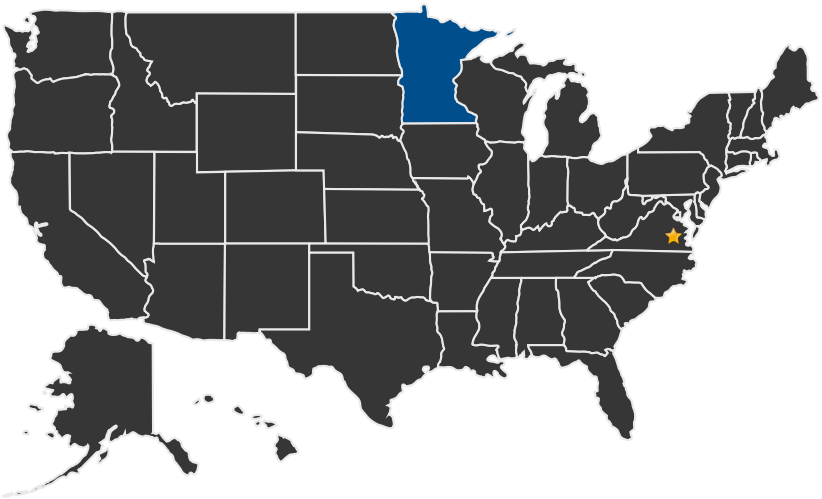
U.S. WORK LOCATIONS AND KEY PARTNERS



U.S. States With Work

Lead Center:
Langley Research Center

Other Organizations Performing Work:

- Emphysic, LLC (Minnetonka, MN)

PROJECT LIBRARY

Presentations

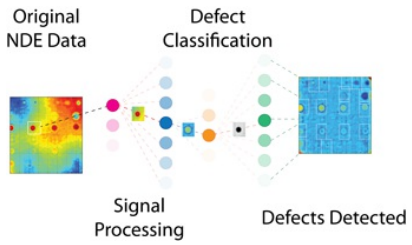
- Briefing Chart
  - (http://techport.nasa.gov:80/file/23568)

Management Team *(cont.)*

Principal Investigator:

- Chris Coughlin

IMAGE GALLERY



Fault-Tolerant NDE Data Reduction Framework, Phase I

DETAILS FOR TECHNOLOGY 1

Technology Title

Fault-Tolerant NDE Data Reduction Framework, Phase I

Potential Applications

Potential NASA commercial applications include data reduction for aerospace inspection systems that generate terabytes of data and signal processing in microwave detection of water ingress in honeycomb structures such as radomes.