

Automated Baseline Change Detection

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Abstract

Automation of the visual inspection of waste materials provides operational benefits to the Department of Energy (DOE) in the form of decreased risks and increased efficiency. Lockheed Martin's Baseline Change Detection (BCD) Sensor System addresses this need with new vision processing and robotics technologies providing an automated visual inspection capability.

Other DOE projects are partially addressing the automated acquisition of optical images and image analysis. This project complements these projects with the development of a reliable and accurate, automated change-detection system, which applies recent advances in optical sensor positioning technology, to automatically detect and isolate barrel changes which may indicate potential containment failures.

Lockheed Martin's robotic motion control technology is integrated with the Kinetic Sciences, Inc. Eagle Eye™ Vision Software system to produce a system that acquires and identifies the target, computes sensor position and orientation, and rapidly repositions the camera to the same position used in the reference image. Then the new image is compared with the archived image using image subtraction software and changes are immediately identified. The BCD sensor system mounts on a DOE mobile platform and is designed to be integrated with other optical interpretation systems, thereby offering the potential for an automated change detection and change interpretation system which operates without manual intervention.

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