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Paper Abstract

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For the past two and a half years at JPL, the *Remote Surface inspection Project* has been developing and integrating the technology for a system to inspect space borne platforms, in particular Space Station Freedom. Three main areas of have emerged which require advancing the level of *robotic* technology: sensor-based inspection and processing, robotic manipulation, and system/user interfacing. This paper discusses several of the technological advances that have been made in these areas:

- Image Processing for Surface Change Detection
- Surface Flaw Analysis using Scale Space
- Sensor Technology Evaluation for Safe inspection Operations
- Redundant Link Robot Control for Dexterous Sensor Placement
- Serpentine Robot For Sensor Access
- Integrated Sensor End-Effector

In this paper, each of these technologies will be described as well as the system problem which they successfully resolve. An overview of the entire inspection system will also be provided to show how the these technological innovations mesh with the system in philosophy and practice.