

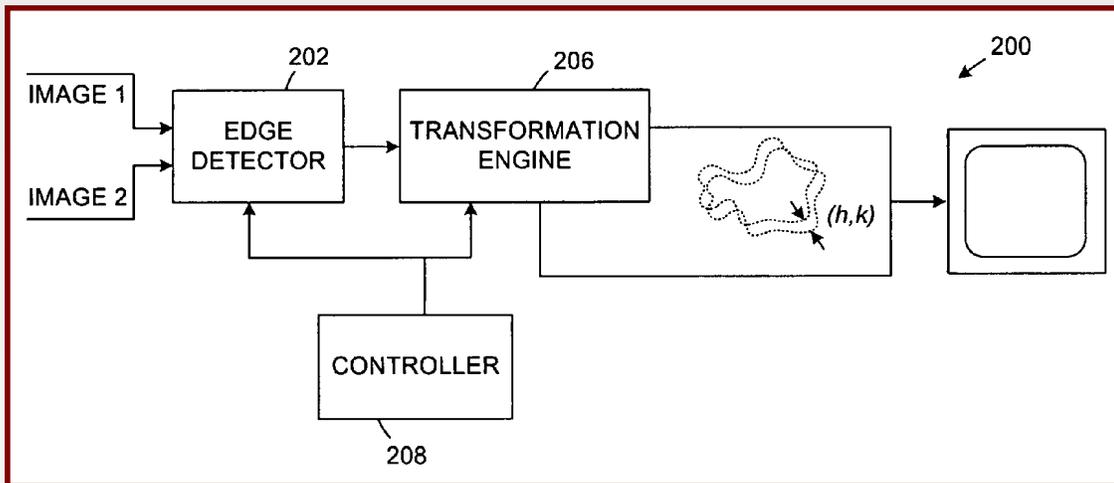
TECHNOLOGY READINESS LEVEL: **9**

US PATENT # 7,912,321

THIS TECHNOLOGY HAS BEEN APPLIED UNDER MISSION CONDITIONS.

TECHNOLOGY SUMMARY

In image processing, registration involves matching two or more images acquired at different times, or from different sensors or perspectives. For example, registration is typically applied when detecting changes that occur over time in an imaged scene, or when compiling information from multiple sensors or viewing angles. Current techniques often fail in the presence of high-frequency artifacts or contrast reversals within the images to be registered, and lack an automated measure of the precision with which registration has been achieved.



Sandia has developed a novel image registration technique that is robust to many of the challenges seen with real-world imagery, and is coupled with a rigorous uncertainty analysis. The edge-based technique enables image registration even in the presence of high-frequency artifacts, poor sensor focus, low sensor

resolution, a lack of strong geometric features, partial terrain obscuration, and contrast reversals. The accompanying uncertainty analysis provides the experimenter with a quantitative measure of the precision of the registration solution: a well-defined statistical confidence region in the space of the registration parameters. The technique is designed to be run in unattended applications, and may be used as an automated check on the validity of registration solutions obtained using other approaches.

POTENTIAL APPLICATIONS

- Medical Imaging
- Security Systems
- Control Systems
- Satellite Imaging
- Remote Sensing
- Document Handling

TECHNOLOGICAL BENEFITS

Provides image registration despite:

- Low sensor resolution
- Poor sensor focus
- Lack of strong geometric features
- Partially obscured terrain
- Contrast reversals
- High-frequency artifacts

TECHNOLOGY INQUIRY?

For more information or licensing opportunities contact us at

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