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NOTICE

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PATENT APPLICATION/TECHNICAL DIGEST PUBLICATION RELEASE REQUEST

FROM: Associate Counsel (Patents) (1008.2)
TO: Associate Counsel (Patents) (1008.2)

Via: (1) Haas Daniel G. (Code 7264)
(2) Division Superintendent (Code 7200)
(3) Head, Classification Management & Control (Code 1221)

SUBJ: Patent Application/Technical Digest entitled:
"HYPERSPETRAL VISUALIZATION EXTENSIBLE WORKBENCH: (a) NRL
Instruction 5510.40C
(b) Chapter 6, ONRINST 5870.1C


ENCL: (1) Copy of Patent Application/Technical Digest

1. In accordance with the provision of references (a) and (b), it is hereby requested that the subject Patent Application/Technical Digest be released for publication.

2. It is intended to offer this Patent Application/Technical Digest to the National Technical Information Service, for publication.

3. This request is in connection with Navy Case No. 79,087

11/15/99
(date)



BARRY A. EDELBERG
Associate Counsel (Patents)

FIRST ENDORSEMENT

Date:

FROM: Haas Daniel G. (Code 7264)
TO: Division Superintendent (Code 7200)

1. It is the opinion of the Inventor(s) that the subject Patent Application/Technical Digest (is) (is not) classified and there is no objection to public release.



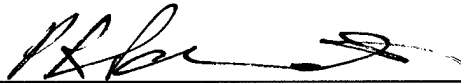
Inventor's Signature

SECOND ENDORSEMENT

Date:

FROM: Division Superintendent (Code 7200)
TO: Classification Management & Control (Code 1221)

1. Release of Patent Application/Technical Digest (is) (is not) approved.
2. To the best knowledge of this Division, the subject matter of this Patent Application/Technical Digest (has) (has not) been classified.
3. This recommendation takes into account military security, sponsor requirements and other administration considerations and there in no objection to public release.



Division Superintendent

THIRD ENDORSEMENT

Date:

FROM: Head, Classification & Control (Code 1221).
TO: Associate Counsel (Patents) (1008.2)

1. This Patent Application/Technical Digest is authorized for public release.



Head, Classification, Management & Control

HYPERSPECTRAL VISUALIZATION EXTENSIBLE WORKBENCH

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates generally to analysis and visualization methods for hyperspectral images.

Description of the Related Art

10 A hypersensor is a sensor which produces as its output a high dimensional vector or matrix consisting of many separate elements, each of which measures a different attribute of the system or scene under observation. A hyperspectral imaging system, in which the sensed attributes are different wavelength bands, is one example of a hypersensor.

15 An available system for analysis and visualization of hyperspectral images, is the Environment for Visualizing Images (ENVI), from Research Systems, Inc.

SUMMARY OF THE INVENTION

It is an object of this invention to provide an improved hyperspectral image analysis and visualization system.

20 This and additional objects of the invention are accomplished by the structures and processes hereinafter described.

An aspect of the present invention is a method for taking collected hyperspectral image data of a scene, identifying targets within that scene, and fitting a shape to identified targets by shrinkwrapping hyperplanes about the target.

5 Another aspect of the present invention is a method for enhancing a hyperspectral image, by automatically stretching the image along one or more axes in one or more regions where a target is identified.

Another aspect of the present invention is a method for enhancing a hyperspectral image by displaying a target on a screen at a higher brightness than the background, such as by displaying the target at full brightness and the background at a selected reduced brightness.

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DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The following are incorporated by reference herein, in their entireties, for all purposes:

(a) U.S. Provisional Patent Application No. 60/107,038, filed November 3, 1998 by Haas et al;

15 (b) U.S. Patent Application No. 08/679,085, "Intelligent Hypersensor Processing System", filed July 12, 1996;

(c) "Hyperspectral analysis and target detection system for the Adaptive Spectral Reconnaissance Program (ASRP)", John M. Grossmann et al.; and

20 (d) "Evaluation of Endmember Selection Techniques and Performance Results from ORASIS Hyperspectral Analysis", Kwok Yeung Tsang et al.

CLAIMS

What is claimed is:

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1. A method for defining targets in hyperspectral image data of a scene, comprising the steps:
 identifying a target within said scene;
 fitting a plurality of conjoined hyperplanes about said target in said scene; and
 fitting a shape to said identified target by shrinkwrapping said hyperplanes about said
10 target by translating and rotating said hyperplanes until a specified fit parameter is satisfied.

2. A method for enhancing hyperspectral image data of a scene, comprising the steps:
 identifying a target within said scene; and
 stretching the image along one or more axes in one or more regions where a target is
15 identified.

3. A method for enhancing hyperspectral image data of a scene by displaying a target on a screen
at a higher brightness than the background

20 4. The method of claim 3, wherein said displaying a target on a screen comprises displaying said
target at full brightness and displaying background at a selected reduced brightness.

ABSTRACT OF THE DISCLOSURE

A method for defining targets in hyperspectral image data of a scene, has the steps: (1) identifying a target within the scene; (2) fitting a plurality of conjoined hyperplanes about the target in the scene; and (3) fitting a shape to the identified target by shrinkwrapping the hyperplanes about the target by translating and rotating the hyperplanes until a specified fit parameter is satisfied.

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