Automated Feature Extraction and Classification From Image Sources

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Introduction

The U.S. Department of the Interior, U.S. Geological Survey (USGS), and Unisys Corporation have completed a cooperative research and development agreement (CRADA) to explore automated feature extraction and classification from image sources. The CRADA helped the USGS define the spectral and spatial resolution characteristics of airborne and satellite imaging sensors necessary to meet base cartographic and land use and land cover feature classification requirements and help develop future automated geographic and cartographic data production capabilities. The USGS is seeking a new commercial partner to continue automated feature extraction and classification research and develoment.

Capabilities

This CRADA involved the use of panchromatic and color-infrared photographs from the National Aerial Photography Program, digital orthophoto quadrangle (DOQ) data produced by the USGS, and commercially available multispectral satellite images to determine the spatial and spectral resolutions necessary to meet USGS cartographic production requirements. The CRADA entailed document research, design of experiments, data manipulation, and demonstrations. At the end of the agreement, a technical report was prepared documenting the problem, approach, hypothesis, testing methodologies, findings, and bibliography.

Unisys provided the primary facilities, technical staff, and systems hardware and software to perform the programming and subsequent data manipulation for this project. The USGS provided the image source materials, ground truth information for the project sites, and expertise on the requirements and standards for USGS mapping programs and applications.

Advantages

Cooperative research in automating the extraction and classification of planimetric and land use and land cover features from image sources is in the public good and will enhance the USGS's ability to provide accurate, timely, and complete geographic and cartographic information. Determining the spectral and spatial resolution characteristics of remote imaging sensors and relating these capabilities to actual resolution needs is key to developing future automated map production capabilities. The USGS further believes that this CRADA was only the first step in developing the capability to effectively perform automated extraction and classification and that other opportunities for collaboration will emerge. Results from this research may eventually be used to influence the design of new sensors contemplated by either the Government or private enterprise.

For More Information

For information on becoming a partner with the USGS on this ongoing project, contact:

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The USGS welcomes discussions with anyone who would like to explore potential CRADA opportunities. For further information, contact:

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