

RaveGrid: Raster-to-Vector Graphics for Image Data

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Converts raster images to scalable vector images

Enables object detection and recognition

Displays various sizes at low bandwidth



Licensable Technologies

RaveGrid™: Raster to Vector Graphics for Image Data

Applications:

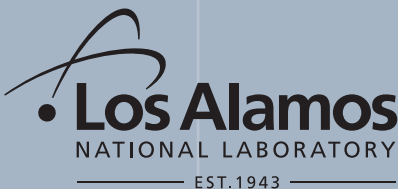
- Electronic Image Search
- Healthcare/Biotechnology
- Mobile Communications
- Geographic Information Systems (GIS)
- Gaming

Benefits:

- Automated feature extraction and shape/object recognition
- Rapid raster to vector conversion
- Rapid image batch processing
- Dramatic improvements in image transmission speed
- Rapid image content analysis and identification
- High image quality with optimal compression
- Intelligent and automated image search

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Summary:

The exponentially growing volume of digital image data is overwhelming the capacity of numerous industries to efficiently and cost-effectively manage the transmission speed, storage, and information contained in these images.

Industries severely affected by these problems include electronic image search, mobile communications, healthcare/biotechnology, and geographic information services (GIS) including satellite imagery and surveillance. Data management devices adversely affected include mobile phones/PDAs, personal and business computers, and big screen TVs. Meaningful advances in image management technology that increase transmission speed, decrease storage requirements, and enhance image relevance are key to removing the costly bottlenecks that exist today and are destined to inundate the global hardware infrastructure.

In response to these problems and the acute need to solve them, Los Alamos National Laboratory (LANL) researchers have developed RaveGrid, a software image analysis technology that converts digital images made of pixels to vector images made of polygons, using a unique and patented process. The RaveGrid technology produces revolutionary optimization of rapid image transmission speed, small file size, and the ability to identify both general and user-defined objects of interest in all digital image types. RaveGrid users can 'teach' the system objects of interest to look for across a large database of images such that the search and identification functions are intelligent, automated, and robust.

RaveGrid's unique capabilities, achieved using mathematical algorithms, can emulate human perception. The technology converts digital images from raster to vector format and employs perceptual filters to group polygons into meaningful shapes that generate high-quality meta-images and identify objects of interest to the user. These images may then be tagged with appropriate metadata. While other software packages analyze images at the pixel level and use mainly spectral (color) data for analysis, RaveGrid uses structural information (shape, texture, and possibly color) to analyze images at the shape or object level. These differences may appear subtle; however the advantages they provide are both revolutionary and relevant across a broad spectrum of applications.

RaveGrid is designed for a wide range of applications with a built-in, expandable library of perceptual filters that allow users to select, modify, mix, and match to suit their specific applications.

Development Stage:

A general purpose Beta version of RaveGrid has been developed as a prototype and can easily be customized for proof of concept with many applications.

Patent Status:

Patented algorithms and an international copyright on software

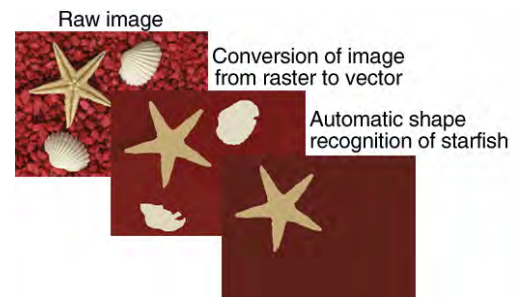
Licensing Status:

LANL is seeking commercial partners interested in collaborating on further development of RaveGrid™, as well as potential licensees for exclusive or non-exclusive licensing.

- The rapid raster to vector conversion capability of RaveGrid is available as demo shareware with limited capabilities from www.lanl.gov/software/RaveGrid/

www.lanl.gov/partnerships/license/technologies/

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These pictures illustrate RaveGrid being used to automatically identify a starfish on the ocean bottom. RaveGrid first converts images from raster to vector format, and then automatically filters out the shapes/objects of interest.