



## **Image Segmenter**

### **Principal Inventors:**

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### **Description of Technology:**

The Image Segmenter automatically segments a 2D, 3D or higher-dimensional image into two subsets without user intervention.

This technology has principal application in medical imaging as well as other graphics and image analysis, visualization, and editing tasks.

In medical imaging, the Image Segmenter takes images (e.g. from an MRI, CAT, PET, ECT, or MMI) and segments structures of interest (e.g. internal organs or arteries) for such purposes as diagnostics or planning of surgical procedures. In 3D, the Image Segmenter isolates three-dimensional interior structures in the human body by locating the voxels that belong to such structures within an array of physical values (e.g. from an MRI, CAT, etc).

Additional applications beyond medical imaging may be found in general image analysis and editing by using the Image Segmenter for the segmentation of a moving object from a video sequence.

Other methods to accomplish segmentation often requires more parameters/thresholds or focus at image boundaries (thus they are too susceptible to (boundary) noise.) Furthermore other methods routinely have topological restrictions or are not guaranteed to give optimal solutions or are not automatic.

The Image Segmenter has the following important advantages over other methods:

- Supports 3 dimensional images as well as higher-dimensional images (e.g. sequence of 3D images such as a beating heart).
- Automated, does not require manual user intervention (though one can use manual intervention "via one click" to choose which objects are of interest for segmentation).
- Generates an optimal solution based on precisely defined optimization criteria.
- Provides an exactly defined degree of smoothness.
- Supports unrestricted topologies (e.g. each segment may have as many holes or bifurcations as appropriate to fit the data).

### **Patent Status:**

U.S. patent pending.

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