Segmenting Stroke-Like Structures in Images

A method for segmenting tubular or stroke-like structures in images

Georgia Tech inventors have created a method for segmenting tubular or stroke-like structures in images. Embodiments of the present invention are directed to segmenting stroke-like structures in images using pearling. Pearling is the generation of an ordered series of pearls, which are variable-radius 2D disks, as a discrete representation of the stroke geometry. Pearling is robust to fluctuations in image intensities (due to noise, etc.) as the forces acting on a pearl are integrated over the region inside the pearl. Pearling is computationally efficient and well suited to user interactivity. Such interactivity can allow operator guidance of the segmentation in a particular direction, as well as operator correction of errant segmentation results.

Summary Bullets

- Computationally efficient
- User-friendly
- Operator guidance — correction of errors

Solution Advantages

- Computationally efficient
- User-friendly
- **Operator guidance** — correction of errors

Potential Commercial Applications

- Diagnosis
- Surgical planning
- Anatomical modeling and simulation
- Treatment verification
- Aerial and satellite imaging

Background and More Information

Tubular structures can appear as strokes (variable width curves in 2D images) or stroke-like structures in 2-dimensional images. Segmentation of stroke-like structures, such as blood vessels, is a fundamental problem in medical imaging, and is an important component of clinical applications involving diagnosis (e.g. stenosis,

aneurysm, etc.), surgical planning, anatomical modeling and simulation, and treatment verification. Segmentation of stroke-like structures is a problem that also arises in other contexts, including industrial applications and aerial/satellite image analysis.

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Publications

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Images

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