An Optimal Graph-Cut Method for Atrial Wall Segmentation from Delayed Contrast MRI
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Goal
- Automatic segmentation of left atrium from Delayed Enhancement (DE) MRI using graph cuts on a proper ordered graph.

Motivation
- Atrial fibrillation (A-fib): Most common cardiac arrhythmia.

Challenges
- Analogy between image segmentation and graph cuts
  - Image segmentation: Categorization of image pixels into different groups.
  - Graph-cuts: Partition of graph nodes into two subsets.

Optimal net surface problem on proper ordered graph

Optimal multiple surface segmentation
- Due to high variability of LA shapes, a learning strategy is used to construct templates.
- Nested mesh layer generation using dynamic particle system.

Model stick computation
- Gaussian weighted sticks
- Average stick at \((X,Y,Z)\) vertex

Arcs in the graph

Results