

## MULTIMODAL DISPLAY

### Visualization:

- Known: RT3D, Virtual Endoscopy
- Angio applications
- Image Fusion, Dental Imaging
- *New: eg Virtual Dissection*

### Quantification:

- Volumes of tumors, aneurysms
- Calcium Scoring, Osteo and PulmoCT
- Perfusion, dynamics, Cardiac
- *Degree of Laryngo-Trachealstenosis*
- *Assessment of infrarenal aortic aneurysms*

## Prerequisites

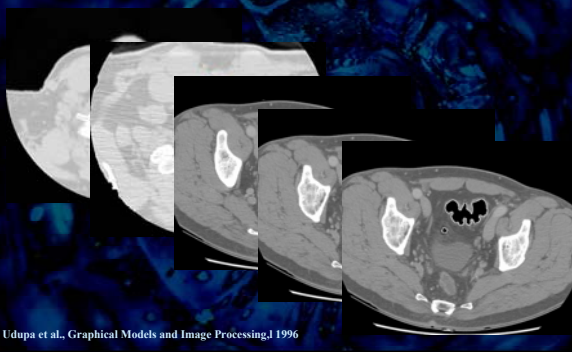
### Segmentation

- (Region Growing)
- Fuzzy Connectedness (air filled organs)
- Active Contour Models (vessels)
  - snakes, ballons

### Centerline of tubular objects

- Skeletonisation

## Seg – Fuzzy Connectedness



## Fuzzy Connectedness - Performance

### Airways (200-300 slices)

- Incorrect slices – manual correction:
    - Normals: n=2.1
    - Pathologic: n=3.9
- p=0.06 n.s.

### Time: 15 – 20s

Live Demo

## Seg – ACM - Snakes

### Assumptions:

- Vessels round -> elliptic
- Only minimal changes from slice to slice

### 2.5D approach:

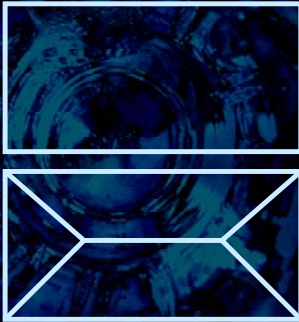
- Set of slices initialized
- For every slice:
  - Contour of prev. slice used for starting
  - Snakes adopt contour according forces in x and y-direction

## Seg – ACM - Snakes



### ***Skeletonisation***

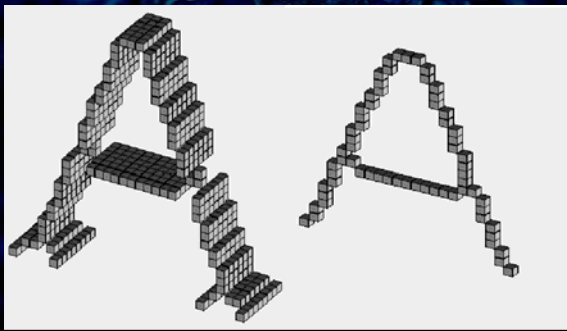
The skeleton of an object is the locus of the centers of all the maximal inscribed hyper-spheres



### ***Skeletonisation - Thining***



### ***Skeletonisation***



### ***Skeletonisation - Thining***

