QUICKSEE:
Virtual-Endoscopic System for Interactive Navigation and Detailed Quantitation

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infoRAD Exhibit Goals:

1. Appreciate virtual endoscopy's potential for 3D thoracic image assessment
infoRAD Exhibit Goals:

2. Understand the “enhanced awareness” afforded by virtual endoscopy over traditional endoscopy
infoRAD Exhibit Goals:

3. Realize need for *automatic image analysis* to make virtual endoscopy truly useful
QUICKSEE: virtual-endoscopic software system

1. 3D thoracic analysis
QUICKSEE: virtual-endoscopic software system

2. Provides many *pictorial* and *quantitative* tools:

   a. Visualize airways

   b. Get measurements (cross-sectional area)
QUICKSEE:  
virtual-endoscopic software system

3. Automatic or manual navigation

a. use automatically computed paths

b. create one yourself
Virtual Endoscopy --- Idea

- Input a high-resolution 3D radiologic image
  - virtual copy of anatomy

- Use computer to explore virtual anatomy
  - permits unlimited navigation exploration
QUICKSEE --- basic operation

1. Load:
   - 3D radiologic image
   - (optional) 3D path data
QUICKSEE --- basic operation

2. Automatic Mode:
   - Automatically compute:
     - paths (axes)
     - extracted regions (airways)
QUICKSEE --- basic operation

3. Interactive Mode:
   - View, Edit, Create paths
   - View structures; get quantitative data
Case 1:
Dog Lung
1. View automatically computed airway axes on reference projections.

Case 1: Dog Bronchial Tree
2. See Virtual Endoscopic View and 2D Slices.

Case 1:
Dog Bronchial Tree
3. See quantitative data and local 2D cross-sections.

Case 1: Dog Bronchial Tree
4. See Oblique slices along airway.

Case 1: Dog Bronchial Tree
5. See plot of lumen diameter along airway extent.

Case 1: Dog Bronchial Tree
6. See a straightened “Tube View” along airway.

Case 1:
Dog Bronchial Tree
7. See Virtual Endoscopic movie along airway.

Case 1:
Dog Bronchial Tree
8. MPEG recording of Virtual Endoscopic movie along airway.

Case 1: Dog Bronchial Tree
Example 2:
Lung Cancer Patient
1. Get automatically computed paths.

Case 2: Lung Cancer Patient
2. See lumen diameter along airway path.
3. View straightened “Tube View” along airway.

Note severe narrowing due to cancer.

Case 2:
Lung Cancer Patient
4. View oblique slices along airway.

Case 2: Lung Cancer Patient
5. See local cross-sections at cancer site.

Note severe narrowing
due to cancer.

Case 2:
Lung Cancer Patient
6. See global 2D slice at cancer site.

Note severe narrowing due to cancer.

Case 2: Lung Cancer Patient
7. See Endoscopic Movie along diseased airway.

Case 2: Lung Cancer Patient
Case 2: Lung Cancer Patient
Case 3:
Healthy Human Complete Lung Scan
1. Get automatically computed paths.

Case 3: Healthy Human
2. See Tube View along airway.

Case 3: Healthy Human
3a. View 2D Global Slices at a site

Case 3: Healthy Human
3b. View 2D Global Slices at a site

Coronal...
3c. View 2D Global Slices at a site

Case 3: Healthy Human
4. If desired, navigate through lungs yourself!