The Annototators present:

Advanced Medical Imaging Annotator

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A M I A: Overview

• The problem
• The solution
• Contextual inquiry
• Low-fidelity prototype
• Interactive prototype
A M I A: The Problem

• Target user group: radiologists and medical imaging researchers
• Accurate diagnoses require careful observation and collaboration
• Current state:
  – Observations shared verbally in reading rooms and offices
  – No intuitive method for sharing written comments
  – Lack of electronic teaching tools to help residents hone their diagnostic skills
**AMA: The Solution**

- Integrated system that allows one to attach comments to a medical image and permit others to add their own observations.
- Includes ability to write observations directly on a printout
  - Allows user to employ digital pen to circle features and jot notes
  - Avoids relatively clumsy use of a mouse for same actions
- Teaching setting:
  - Students indicate items of interest on image
  - Teacher reviews annotations, indicates missed features, includes tips for future analyses
A M I A: Contextual Inquiry

User characteristics:

• Radiologists typically assess images in dedicating reading room and offices
• Researchers process images at point of acquisition, lab workstations, desks
• Sharing of written observations lacking.

Target User Demands:

• Quick, intuitive way to choose regions of interest (ROI’s).
• System should improve efficiency and reduce time spent on each image
• Quicker, more direct way to annotate medical images in general.
AMIA: Contextual Inquiry

AMIA application

images in hierarchy

medical image with strokes

orientation info -> D

slider control for moving through image slices

layers and stroke history

options
A M I A: Contextual Inquiry

General Annotation

Comments:
1. Notice the transparency of the image.
2. WTF is this?
3. Images can be resized to allow writing in margins.

ROI Selection

Comments:
- Draw border around ROI
- Check analyses for selected ROI:
  1. Pixel histogram
  2. Water diffusion
  3. Compute mass
- Other(s):

[ ] Done (Check Last)
A M I A: Lo-Fi Prototype
AMIA: Lo-Fi Prototype
AMIA: Lo-Fi Prototype

Disadvantages:

- Current ROI selection tools more effective
- File I/O insufficient
- Image orientations insufficient
- Need ability to print multiple images at a time

Advantages:

+ General annotation process quick and intuitive
+ Student/teacher functionality praised strongly by each interviewee
A M I A: Interactive Prototype

Tasks

1. (Easy) Login and load files.

2. (Medium) Add text comments to previously annotated image.

3. (Hard) Select, print and annotate a medical image.
A M I A: Interactive Prototype
A M I A: Interactive Prototype