System for Integrating Digital Photos with Radiology Images

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Problem: Patient Misidentification During Radiology Studies
Misidentification Errors in Radiology

• Measured imaging exam error rates: 0.26% (Gale and Gale), 0.73% (Kuzmal and Dayhoff)
• Actual error rate is probably much higher
• JCAHO 2012 Guidelines - Use at least two patient identifiers: name, SSN, DOB, etc.
• Current practices fraught with errors (language barrier, unconscious patient)
Proposed Solution

• Point-of-care facial photographs with medical imaging studies
• Integrated acquisition, storage and display of photographs with medical images
• DICOM standard accommodates visible light images
• Affordable, off-the-shelf technology (digital cameras/memory)
System Architecture

PACS: Picture Archiving and Communication System

ABCD-IP: Android-Based Camera Device w/Integration Processor

CT PET Ultrasound X-ray
Prototype Android-Based Camera Device/Integration Processor

- Bluetooth-enabled
- RFID Reader
- (X-Ray Cassettes)

- Leopardboard
- Camera Card

- BeagleBoard-xM Processor
- Data Screen
Clinical Study

Does the addition of photographs increase the detection rate of mismatched radiographic pairs?

5% ERROR RATE
22% ERROR RATE
Use of Photographs Decreases Interpretation Time

<table>
<thead>
<tr>
<th>Without Photos</th>
<th>With Photos</th>
<th>Interpretation Time Decrease</th>
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<tbody>
<tr>
<td>32.16 min</td>
<td>23.80 min</td>
<td>26%</td>
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Photographs provide informative information (lines, tubes, etc.)
IP Protection /Commercialization Strategy

• IP Protection
  – U.S. Provisional Patent
  – Priority Date: January 2012
  – Application covers system, computer-readable storage medium and methods for generating an image series

• Commercialization strategy
  – Separate add-on system
  – License to hardware manufactures (GEHC, Siemens, etc.)