Parascript® AccuDetect® Computer-Aided Detection (CAD) software helps radiologists read digital mammograms. Using several complementary algorithms and sophisticated voting methods to achieve high sensitivity and low false-positive rates, AccuDetect identifies areas suspicious for breast cancer for further review.

Results

According to the retrospective comparative study, “Malignant Lesions on Mammography: Accuracy of Two Different Computer-Aided Detection Systems,” by Lobbes et al.¹, the previous version of the AccuDetect CAD system² showed better overall performance when compared to iCAD’s Second Look³ in detecting masses, microcalcifications, and all cancer types, especially in extremely dense breasts. When compared to Second Look in extremely dense breasts (ACR 4), AccuDetect demonstrated 15.4 percent increase in detection of both masses and calcifications with similar operating points for both CAD systems. Most importantly, for total cancer cases in extremely dense breasts, the percentage of cancers correctly identified by AccuDetect was 14.6 percent higher than that of Second Look, again with similar operating points.

These differences can be directly related to the mechanism that each system uses in detecting lesions. Second Look detects culprit lesions on mammograms using image processing, pattern recognition, and artificial intelligence techniques based on the knowledge from thousands of mammograms. In addition to these well-known approaches, AccuDetect system uses multiple independent cancer detection algorithms and unique patented voting methodology⁴ to combine its findings. Comparing the results of the multiple image recognition processes allows for the mitigation of the inherent faults of the recognition processes, thus leading to reduced false-positive and false-negative rates.

Performance

<table>
<thead>
<tr>
<th>SUPERIOR CAD WORKFLOW PERFORMANCE</th>
<th>DETECTION OF SOFT TISSUE DENSITIES</th>
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<tbody>
<tr>
<td>• Fast processing time - 11 seconds per image, 45 seconds per 4-view study. (Compared to: iCAD’s SecondLook: 30 seconds per image, 120 seconds per 4-view study; and Hologic’s R2: 30 seconds per image, 120 seconds per 4-view study.)⁵</td>
<td>• Detects soft tissue densities with a diameter between 5mm and 50mm.</td>
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<td>• Priority queuing of preferred devices for important or urgent studies.</td>
<td>• Results for soft tissue densities: 83.3% sensitivity with 0.95 false positives per four-view study.</td>
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<td>• CAD server supports up to four FFDM systems.</td>
<td>OUTSTANDING STANDALONE PERFORMANCE⁶</td>
</tr>
</tbody>
</table>

DETECTION OF MICROCALCIFICATIONS

| • Detects calcification clusters consisting of several calcifications with size between 0.1mm and 0.8mm. in diameter within 2cm² area. | • 91% sensitivity with 1.6 false positives per four–view study. |
| • Results for calcifications: 90% sensitivity with 0.75 false positives per four-view study. | • 45% specificity (percentage of normal cases where CAD did not show any marks). |
| | • Delivers very high performance on dense/extremely dense breasts – 85% sensitivity, 43% specificity, 1.5 false positives per four-view study.⁷ |

² AccuDetect Galileo version 4.0.1.
³ iCad Second Look version 7.2.
⁴ Voting in mammography processing, US patent 8,311,296.
⁶ See Accudetect device labeling for complete clinical data.
⁷ The differences in both sensitivity and specificity between AccuDetect CAD results for dense or extremely dense breasts and fatty or scattered fibroglandular breasts are statistically insignificant.
Features

PRECISE CAD MARKERS

- Highlight suspicious lesions without obscuring regions of interest.
- Mark densities with ovals and microcalcifications with rectangles that surround the region of interest.
- Correspond to the size of suspicious calcification clusters and densities.
- Toggle on/off (enabled by majority of review workstations).

OPEN SYSTEM ARCHITECTURE

- Supports direct radiography (DR) Full Field Digital Mammography (FFDM) systems. The software adapts to the specific characteristics of each FFDM detector to maximize performance.
- Integrates with multiple clinical workflows including acquisition and review workstations, picture archiving and communication systems (PACS) and other DICOM enabled devices.

COMPATIBILITY

- A True Multi-Vendor Solution, AccuDetect 7.0 includes a Windows 7, multi-vendor CAD server that provides consistency across all digital mammography systems including GE, Philips, Hologic, FujiFilm, IMS, Carestream, Planmed, AGFA, Allengers, and Siemens. The AccuDetect platform is specifically designed to give radiologists the ability to customize their platform solution. AccuDetect’s scalable design provides customers the freedom to choose the products and functionality needed today and in the future.

RECOMMENDED COMPUTER

Processor
4 Core i7-3770, 3.5GHz

RAM
8 GB

Hard Drive
250GB SATA, 7200 RPM Hard Drive

Network
1 GB Ethernet card

OS
Windows 7 Professional, 64-bit

Hyper Threading
Enabled

CONNECTIVITY

Network Interface, Ethernet Interface (RJ45 Connector)

UNIVERSAL DICOM

CONNECTIVITY

- Supports DICOM Structured Report
- Sends results to multiple destinations
- Automatic send/receive of results
- 10/100/1000 Base T Ethernet
- Remotely accessible

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FDA has approved Parascript AccuDetect Computer-Aided Detection (CAD) 7.0 to be licensed for seven mammography systems in the U.S.: GE, Philips, Kodak, FujiFilm, Hologic, IMS, and Planmed. AccuDetect is also CE marked and compatible with direct radiography (DR) and computed radiography (CR) mammography systems from Agfa Healthcare, Allengers, Carestream, FujiFilm, GE Healthcare, Hologic, IMS, Philips, Planmed, and Siemens.