FusionViewer: An Open Source Display Application for PET/CT Medical Images

Yi Lu1, Sayan Pathak2,3, Lixin Gong1, Jill R. Goldschneider1, Paul E. Kinahan3
1. Insightful Corporation, Seattle Washington, USA
2. Allen Institute for Brain Science, Seattle Washington, USA
3. Dept. of Radiology, University of Washington, Seattle, USA

Abstract

We have developed an open-source application specifically for PET/CT image display that is both fast and platform-independent. There are several high-quality PET/CT display systems available, but these are not open-source and/or platform independent. The combination of PET and CT images offer both accurate and sensitive cancer information with respect to detailed patient anatomy. The application (FusionViewer) facilitates efficient visualization and analysis of PET/CT studies in different modes (linked cursor display, alpha-blend mode, checkerboard mode and split window mode). Localization is preserved when switching between display modes. FusionViewer is implemented in Java and linked to the Java OpenGL (JOGL) library and Insight segmentation and registration toolkit (ITK) library, which make it both fast and a cross-platform application. Its graphical user interface makes it easy to be used by physicians, radiologists, and research scientists.

Key Features

- 2D and 3D image data
- Display modes:
  - Fusion: alpha blend, checkerboard, split window
  - Linked cursor
  - Fast navigation through 3D view
  - Locked cursor position
  - Adjustable opacity
- Color maps and window/level
- Rectangle ROI & line measurement
- Data format: MetaIO, DICOM, JPEG, TIFF, PNG, and Interfile

Future Work / User’s Contribution

- Feature Wish List
  - GUI improvement: resizing; ellipse ROI ...
  - Image IO extension: DICOM; header info ...
  - Image modality extension: MRI; X-ray ...
  - Image registration: integration of registration function with GUI
- OS support: Linux, BSD, Sun ...

Acknowledgements

- NIH Grant R44 CA099329 and R01 CA115870
- Insight Segmentation and Registration Toolkit
- Ruth E. Schmitz & Adam A. Alessio

Using FusionViewer

- The application (FusionViewer) facilitates efficient visualization and analysis of PET/CT studies in different modes (linked cursor display, alpha-blend mode, checkerboard mode and split window mode).

System Requirements

- Windows XP, Mac OS 10.3.9 or later
- Java Runtime Environment (JRE) 10.4 or later

Latest Release

- 1.0 Alpha for Mac OS
- 1.0 Alpha for Windows XP

http://fusionviewer.sourceforge.net