Using MIView

Opening Images

To open an image, go to File... Open, or click the Open File icon on the main toolbar. Choose the file(s) you want to open by clicking the ... button. You can select a single file or multiple files. Choose the options you want, such as file type or if the file is a DICOM mosaic image. Specific situations follow:

If you want to...

- **Open a 3D DICOM volume from a series of images** - Select all the DICOM images in a folder and select "*Open only selected files*", then click Open. Or choose one DICOM file and select "*Open all files in folder with same extension*"
- **Open a 3D Analyze/Nifti image** - Select the file and either select "*Open only this file*" or "*Open only selected files*".
- **Open a 4D Analyze/Nifti set from a series of 3D Analyze/Nifti images** - Select all the Analyze/Nifti images in a folder and select "*Open only selected files*", then click Open. Or choose one Analyze/Nifti file and select "*Open all files in folder with same extension*"
- **Open a 4D set from a series of DICOM mosaic images** - Select all the DICOM mosaic images in a folder and select "*Open only selected files*"

", then click Open. Or choose one DICOM file and select "
Open all files in folder with same extension
". Check "File(s) are DICOM mosaic images", then select the X and Y size and number of slices. You can check the X and Y size by opening a single DICOM mosaic image without the mosaic option and recording the image dimensions and dividing by the number of rows and columns.

Viewing Images

When an image is first loaded, the default single plane view will be shown. You can choose different viewing methods by clicking the icons on the toolbar. The options available for that viewing method will be shown on the lefthand toolbar.

If you want to...

- **Change image contrast (window center/width)** - Right click with the mouse and drag across the image; brightness is adjusted by moving up and down, contrast by moving left and right. The current window center and window width are displayed in the lower right corner of the viewer.
- **Zoom in/out** - Move the zoom slider or click the zoom spin button. Selecting "Best Fit" automatically finds the optimal zoom value to fill the screen.
- **Change viewing plane** - Click the appropriate viewing plane; 0,1,2
- **Change current volume** - If a 4D dataset is loaded, such as for viewing a timecourse, the displayed volume in the series can be changed by using the
Volume
spin control.
- **Use a color map** - Click "Use color" and select the colors you want to use. The left color button corresponds to the low range of image values (normally black), and the right button to the high range (normally white). Color mapping is applied after the window levels are applied.

- **Rotate a 2D image** - The Z axis rotation is useful for rotating right or left. X and Y axis rotations allow for 'flipping' of an image. All can be rotated to arbitrary degree.
- **Use the orthogonal view** - Orthogonal view is useful for locating a voxel in a 3D volume, and also useful when viewing 4D data sets. Left click on the images to recenter the axes. If 4D data is loaded, the timecourse for that coordinate (and the 6 coordinates near it) will be displayed, otherwise an image with 3 intersecting planes will be displayed.
- **View multiple slices** - Click the multislice icon on the toolbar. For volume data, several slices can be displayed in a table format. Options such as the number of rows/columns can be selected from the left hand toolbar.
- **View a volume rendering of 3D data** - Click the volume rendering button on the toolbar. Volume rendering is not yet well supported, but can be used for basic 3D volume visualization. The 3D volume can rotated by clicking and dragging.
- **View in high/low resolution** - Viewed images use bilinear interpolation by default when zoomed higher than 100%. This can be turned on/off by clicking the "View Hi/Lo

Resolution" button on the toolbar.

- **Turn on/off text overlay** - Image information such as patient name, DOB, study, etc are displayed as an overlay on images by default. This can be turned on/off by clicking the "Show/Hide Image Overlay" button on the toolbar.
- **Turn on/off location lines in orthogonal view** - Lines are displayed by default in the orthogonal view. These can be turned on/off by clicking the "Show/Hide Slice Lines" button on the toolbar.

DICOM Anonymizer

A tool for anonymizing DICOM images in place is available under the Tools->Anonymize... menu options. Add files to be anonymized by clicking the Add Files... button. Multiple files can be added at a time. Files from multiple directories may also be added. Change the fields you want to anonymize or change, and click Anonymize. This will overwrite the existing file with the anonymized DICOM file, so make a copy if you want to keep the original intact.

Conversion Utility

Images can be converted between formats using the conversion utility available under the Tools->Convert Files... menu option. Choose the type of conversion you want to perform and choose any other options such as flipping and output locations and filenames. Choose the files you want to convert based on the following table:

Conversion Type	**Input Files**	**Output Files**
2D DICOM -> 2D Raster	single	single
2D DICOM -> 3D Analyze/Nifti	multiple	single
2D DICOM Mosaic -> 3D Analyze/Nifti	single	single
2D DICOM Mosaic -> 3D Analyze/Nifti	multiple	single
3D Analyze/Nifti -> 4D Analyze/Nifti	multiple	

single

DICOM Browser

A directory or directories of DICOM files can be searched recursively and summarized in a simple interface. To open the browser, go to File->DICOM Browser... on the main MIView window. If an existing database exists, it will load that. To rescan a directory or scan a new directory, select a directory by typing it in the directory box or clicking the ... button. It will scan the directory (recursively if selected) and display the summary. Information is organized by Patient->Study->Series->File.
The buttons Open Series and Open File will open the currently selected series or single file.

Colormap Editor

When displaying data in any of the standard views, a colormap can be applied (to grayscale images only). Several default colormaps are provided, but you can edit exisiting maps and create new ones.

To open the colormap editor, go to Edit->Transfer Function Editor (color mapping)... on the main window. The available color maps will be displayed on the left, with the currently selected map displayed on the right.

By clicking and dragging the yellow/white boxes on the Preview, you can change the position of a color. Right clicking on the preview will add a new color. Double clicking on a yellow/white box will bring up the color dialog.

Colormaps will be updated in realtime for the currently displayed image. Changes you make will only be saved permanently when click Save Color Maps.

Saving Screenshots

To save a screengrab/screenshot of an open dataset, go to File->Save Screenshot... Choose the filename by clicking ... and choose the image type. You must add the appropriate extension to the end of the file to save properly.

Hardware Requirements

MIView will run on any Windows 2000/XP/Vista based system, however performance may be significantly slower on lower end CPUs and graphics cards. For viewing images, and especially volume rendering, A CPU of at least 1.5GHz is necessary, a video card that supports at least OpenGL 2.0, and at least 1GB of RAM. Conversion and anonymization tools do not require a

fast CPU or video card, but may require large amounts of RAM if you are converting large datasets.

Current Filetype Support

MIView can read DICOM v3, NEMA/ACR, Papyrus, Jpeg, GIF, bitmap, TIFF, Analyze 7.5, and Nifti1 files. It can convert to raster (jpeg, bitmap, etc) and Analyze/Nifti1.

While the following datatypes (counterpart C++ datatype name) can be loaded...

- signed/unsigned 8-bit integer (char)
- signed/unsigned 16-bit integer (short int)
- signed/unsigned 32-bit integer (int)
- signed/unsigned 64-bit integer (long int)
- 32-bit floating point (float)
- 64-bit floating point (double)
- 128-bit floating point (long double)
- complex 32-bit floating point (2x float)
- complex 64-bit floating point (2x double)
- complex 128-bit floating point (2x long double)
- RGB (unsigned char)

... only the following datatypes can be displayed and converted:

- signed/unsigned 8-bit integer
- signed/unsigned 16-bit integer
- signed/unsigned 32-bit integer
- 32-bit floating point
- RGB