

Plugins

M I P A V

Medical Image Processing, Analysis, & Visualization

<http://mipav.cit.nih.gov>





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Medical Image Processing, Analysis & Visualization & Plugins

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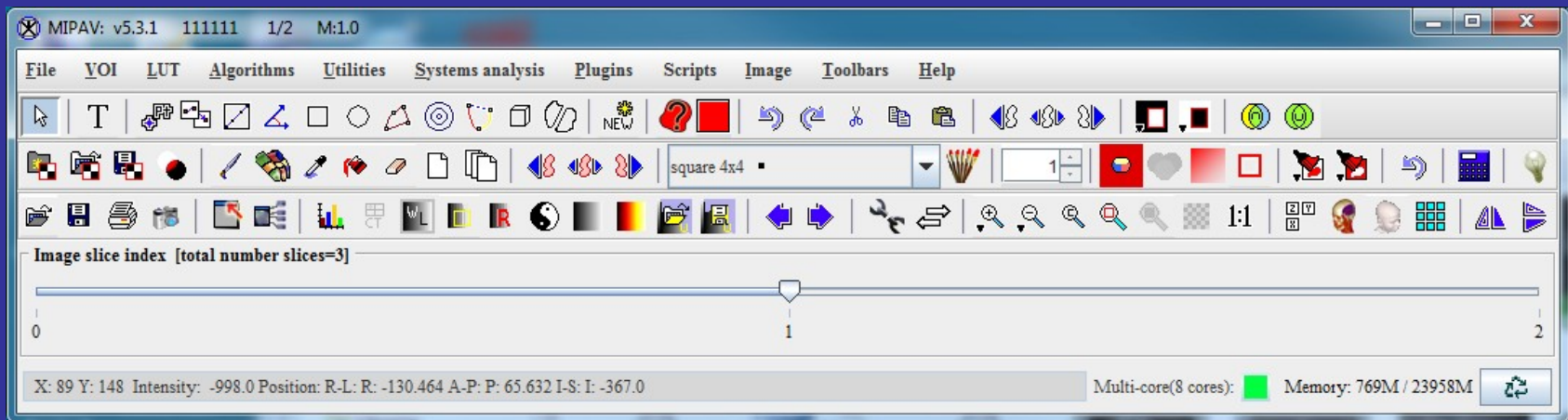
Center for Information Technology

(301) 594-5887

<http://mipav.cit.nih.gov>



Mipav Interface



- *Options exist*
- *How to manipulate*

File VOI LUT Algorithms Utilities Systems analysis Utilities Systems analysis Plugbars Help

- Autocorrelation coefficients
- Autocovariance coefficients
- Brain tools
- Edge detection
- Image slice index [tot
- Extract surface (marching cubes)
- FFT
- Filters (frequency)
- Filters (Gabor)
- Filters (homomorphic)
- Filters (spatial)
- Filters (wavelet)
- Histogram tools
- Hough transform
- Insight toolkit (auto ITK)
- Microscopy
- Morphological
- Principal component
- Registration
- Segmentation
- Shading correction
- SNR
- Spatial statistics
- Transformation tools
- 4D tools
- Center of mass
- Clone (copy)
- Conversion tools
- Correct image spacing
- Crop
- Fill image
- Flip image
- Generate grid
- Image calculator
- Image calculator - Bulk Images
- Image math
- ImageJ
- Intensity Projection
- Invert
- Match images
- Mosaic to 3D volume
- Noise
- Pad
- Quantify
- Reorientation
- Replace pixel/voxel value
- Rotate
- Slice tools
- Subtract VOI background

Multi-core(8 cores): Memory: 769M / 23958M

Computer > Local Disk (C:) > Program Files

Organize	Include in library	Share with	Burn	New folder
★ Favorites				
Dropbox	7-Zip			5/6
my - Shortcut	ActivIdentity			12/8
sensenej - Shortcut	Altiris			11/7
Downloads - Shortcut	Application Verifier (x64)			5/5
4016572-2004_06_03-ME	Common Files			4/1
Libraries				
Documents	Debugging Tools for Windows (x64)			5/5
longAbd (2)	DVD Maker			7/1
longAbd	Eclipse			5/1
mipav	Eclipse2			9/1
Music	Eclipse3			9/1
Pictures	Hewlett-Packard			1/1
Videos	HPD Software			4/2
	HP			5/3
	IIS			4/3



Plugins

- PlugInAlgorithm – Develop new functionality and ability to call functions already in MIPAV.
- PlugInFile – Develop files readers to support unique file formats.
- PlugInGeneric – Plugins that do not require an open image.
- PlugInView – Develop new visualizations of datasets.
- PlugIn – ImageJ plugin.



Plugins

- To build a plugin, three files are typically used:
 - PlugInTest.class
 - Interface between MIPAV and plugin.
 - PlugInDialogTest.class
 - Creates dialog for input.
 - PlugInAlgorithmTest.class
 - The actual algorithm.



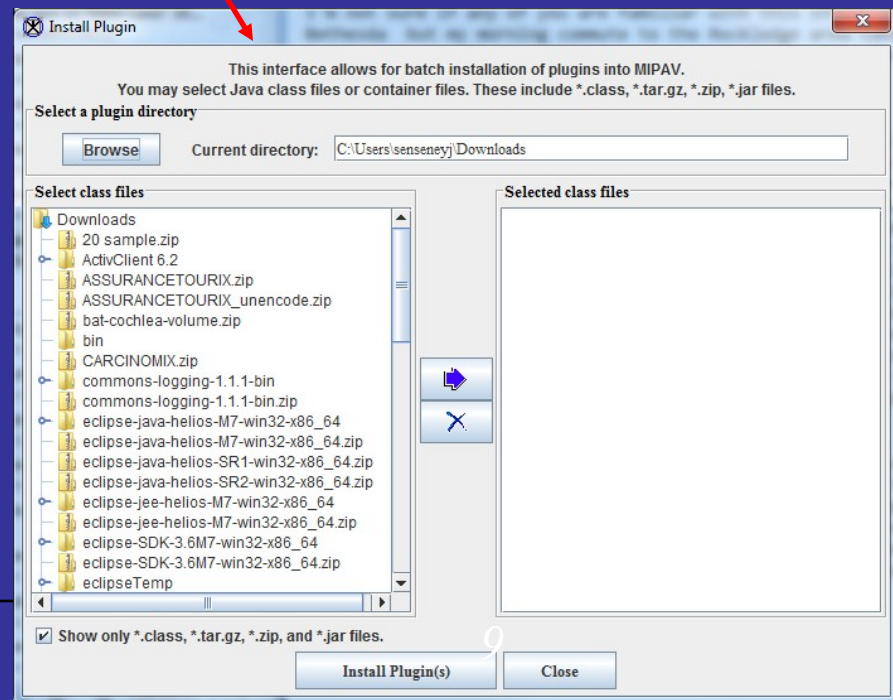
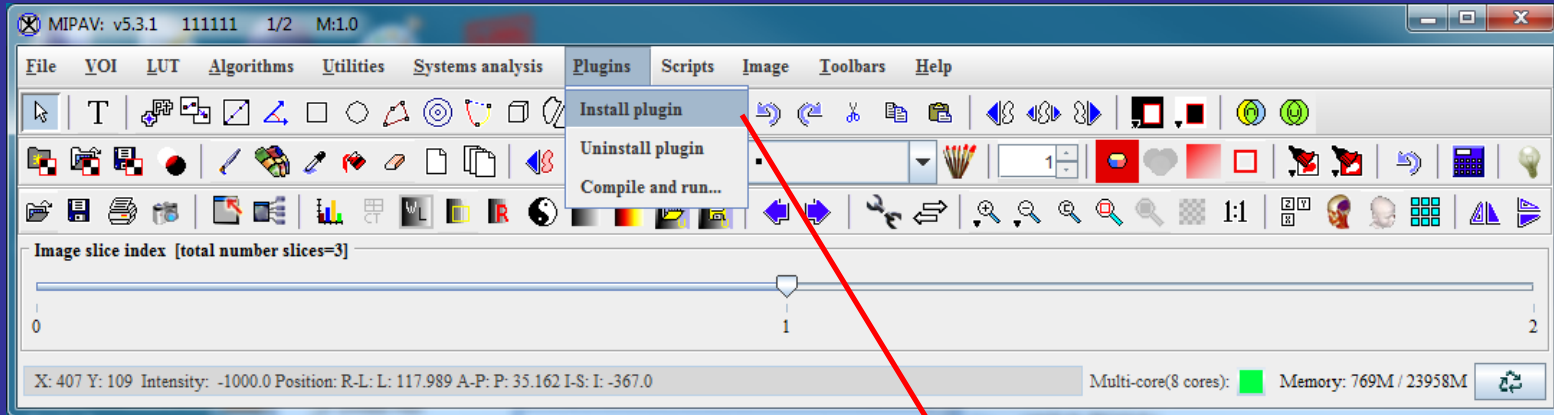


Plugins - Location

- Stored for each user:
 - Windows - C:\Users\{{user_name}}\mipav\plugins
 - Linux/Mac OS - /home/{{user_name}}/mipav/plugins



Plugins - Installing



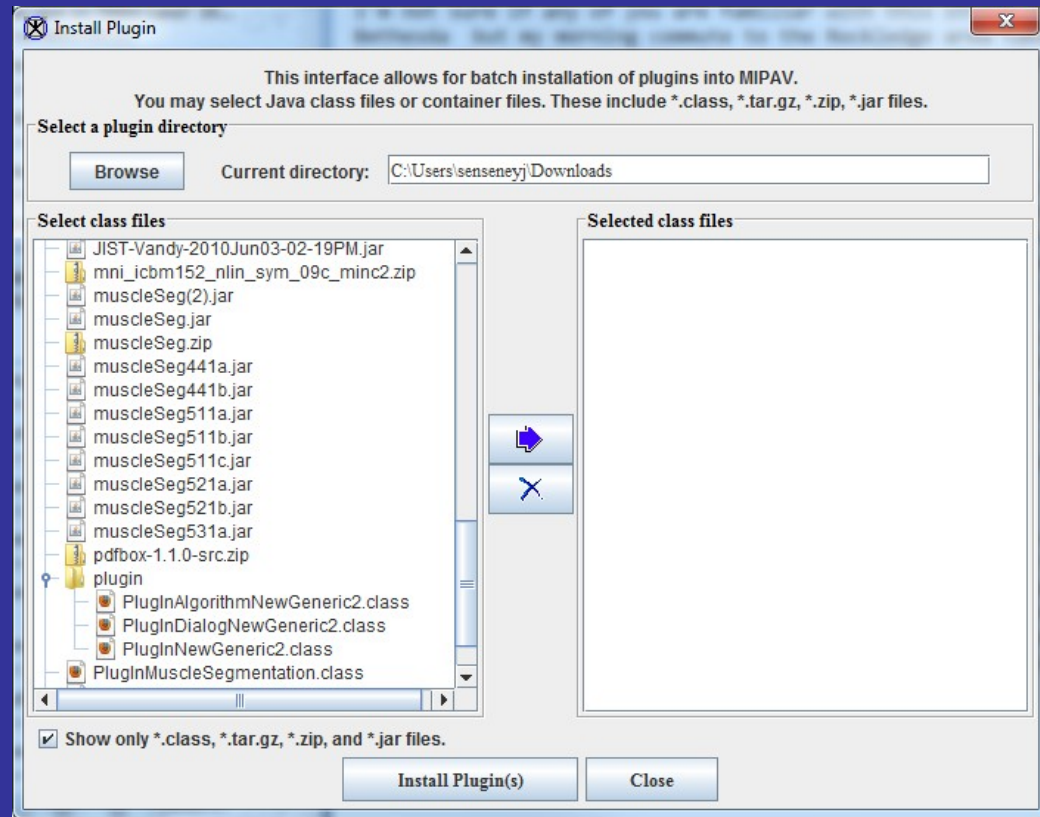
Plugins – Installing

- Installing a plugin (Plugins -> Install Plugin)

Copies files:

- .class
- .jar
- .zip

into user directory.

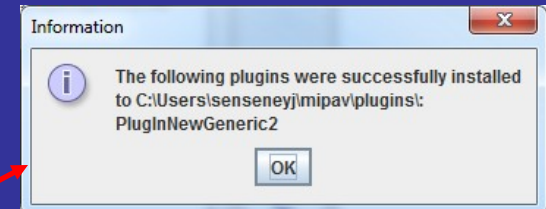
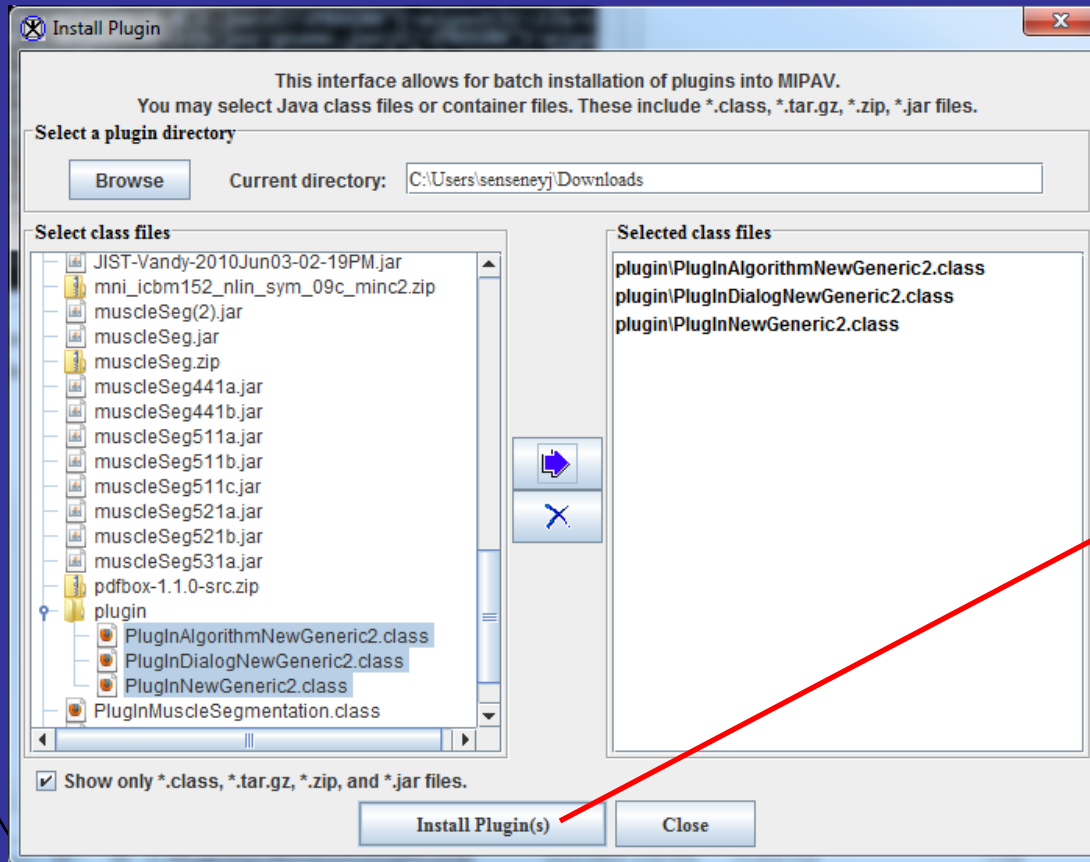


HINT:

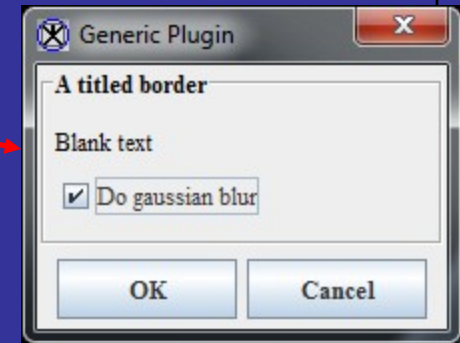
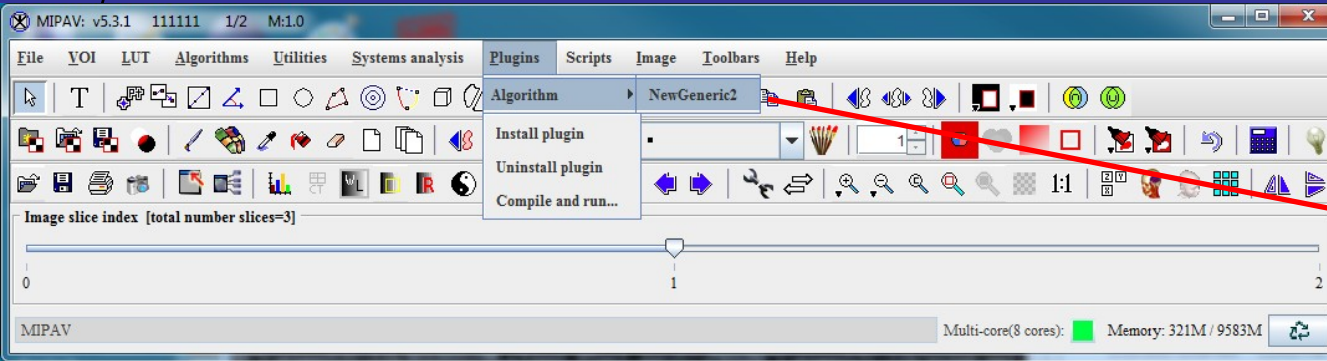
If something goes wrong, just copy the files yourself using locations on Slide 8.



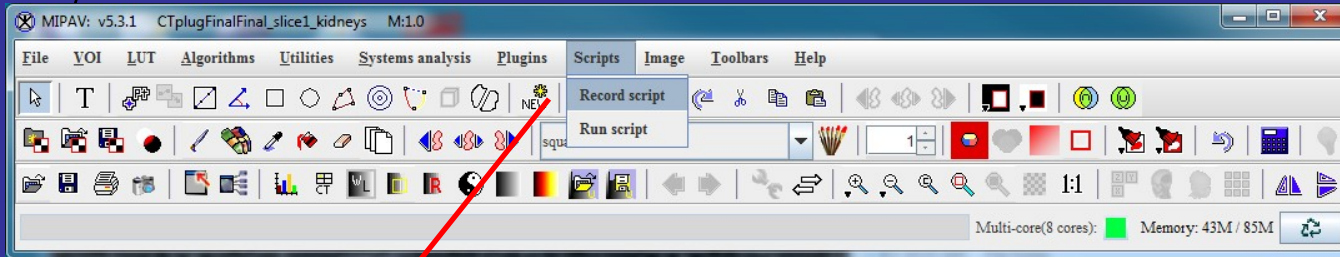
Plugins – Installing (2)



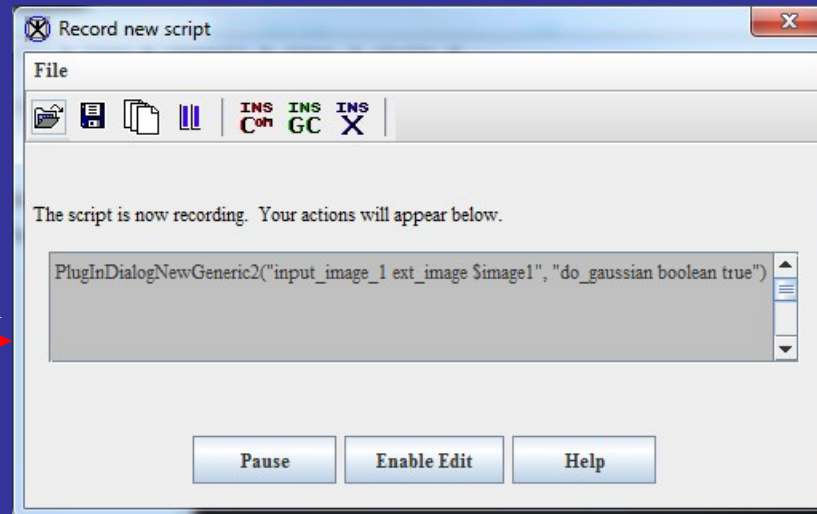
Plugins - Executing



Plugins - Scripting

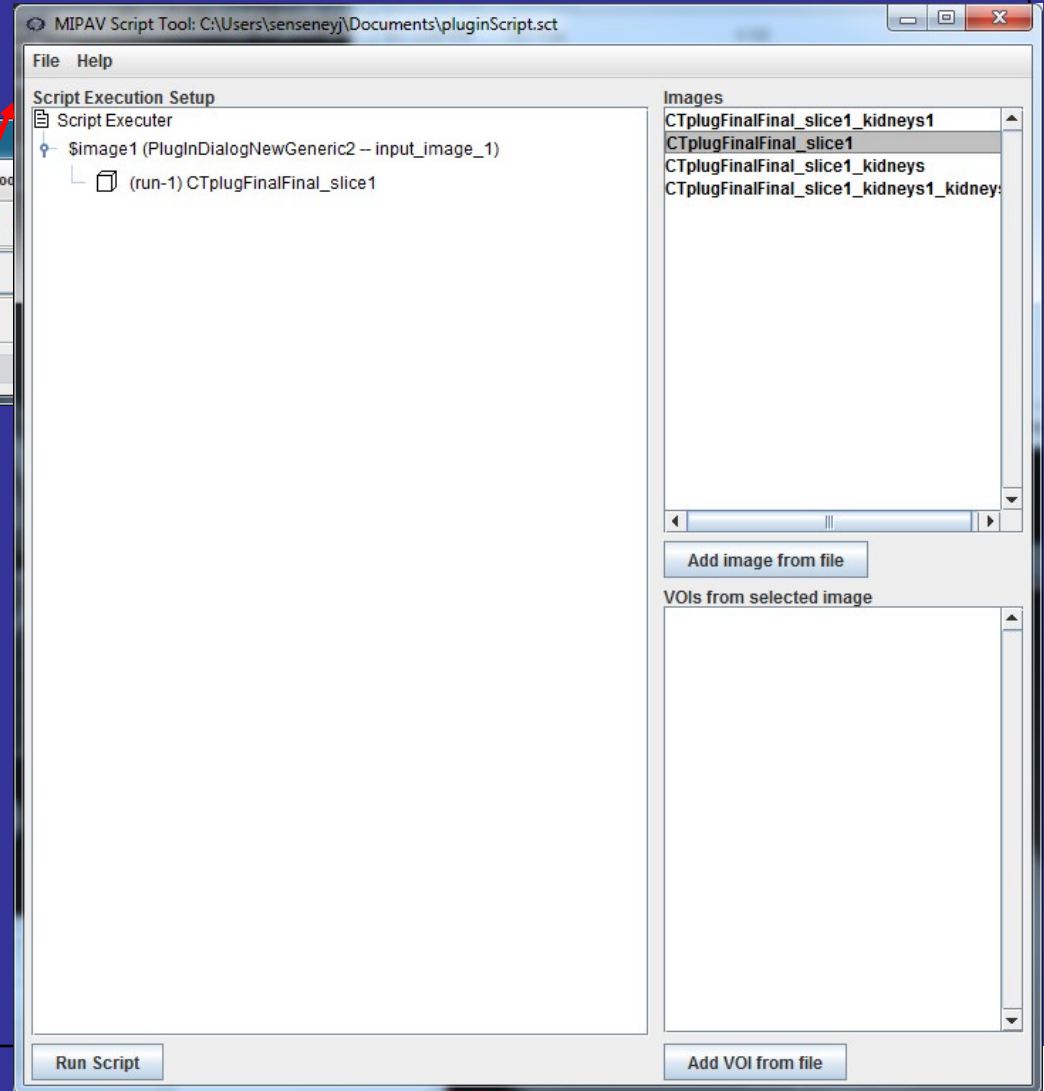
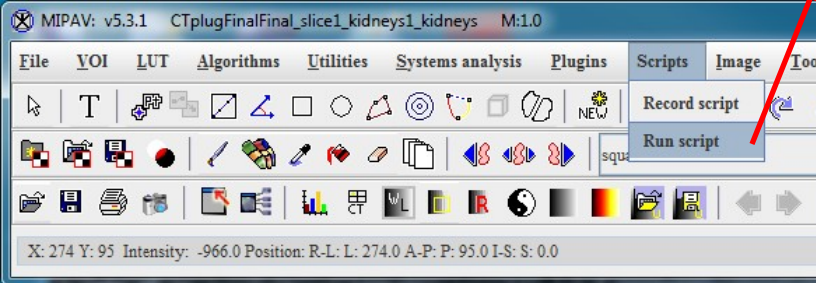


Execute plugin

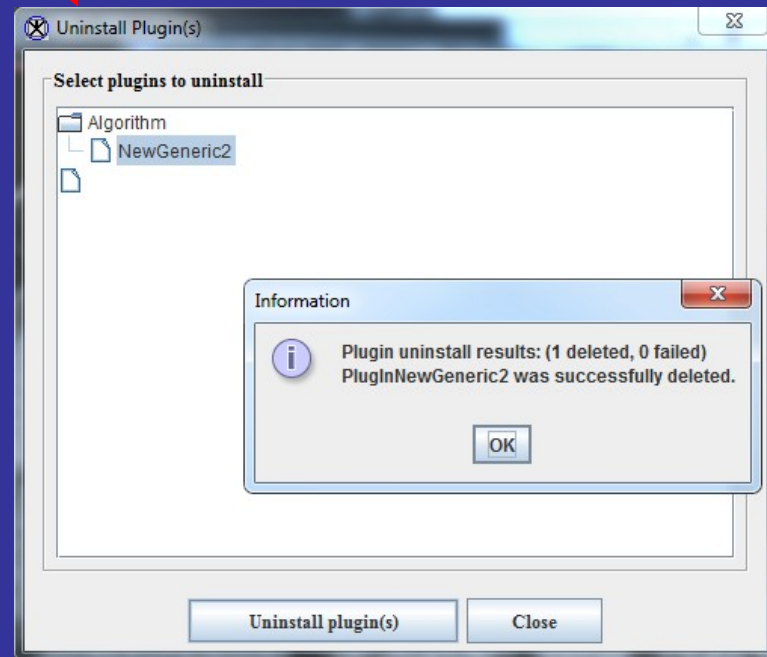
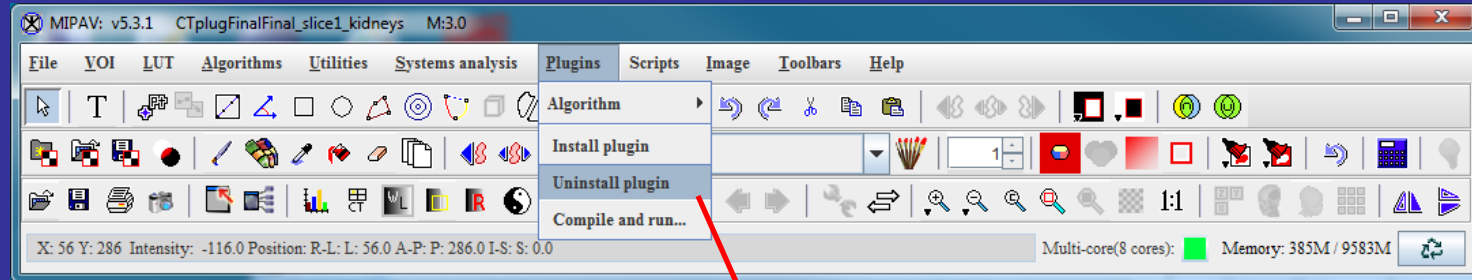




Script Running Review



Uninstall Plugin





Plugin Lab

- Install

- PlugInCT_MD – already in MIPAV

- MuscleSegmentation –

<http://dcb.cit.nih.gov/~sensenej/code/muscleSeg.html>

- Bio-Formats - <http://dcb.cit.nih.gov/~sensenej/code/bioformats.html>

- ImageJ –

<http://dcb.cit.nih.gov/~sensenej/code/imagej.html>





Plugins from command line

- Mipav -p Plugin_Name
- Can be run headless



Break - Review

- Plugins
 - File
 - Generic
 - Algorithm
 - View
- Stored in user folder
- Install, Run, Uninstall



Development environment

- Textpad: <http://www.textpad.com/>
 - Simple, few linked files
 - Want to learn Java
- Eclipse: <http://www.eclipse.org/>
 - Many files, libraries
 - Source repository
 - Want to use Java



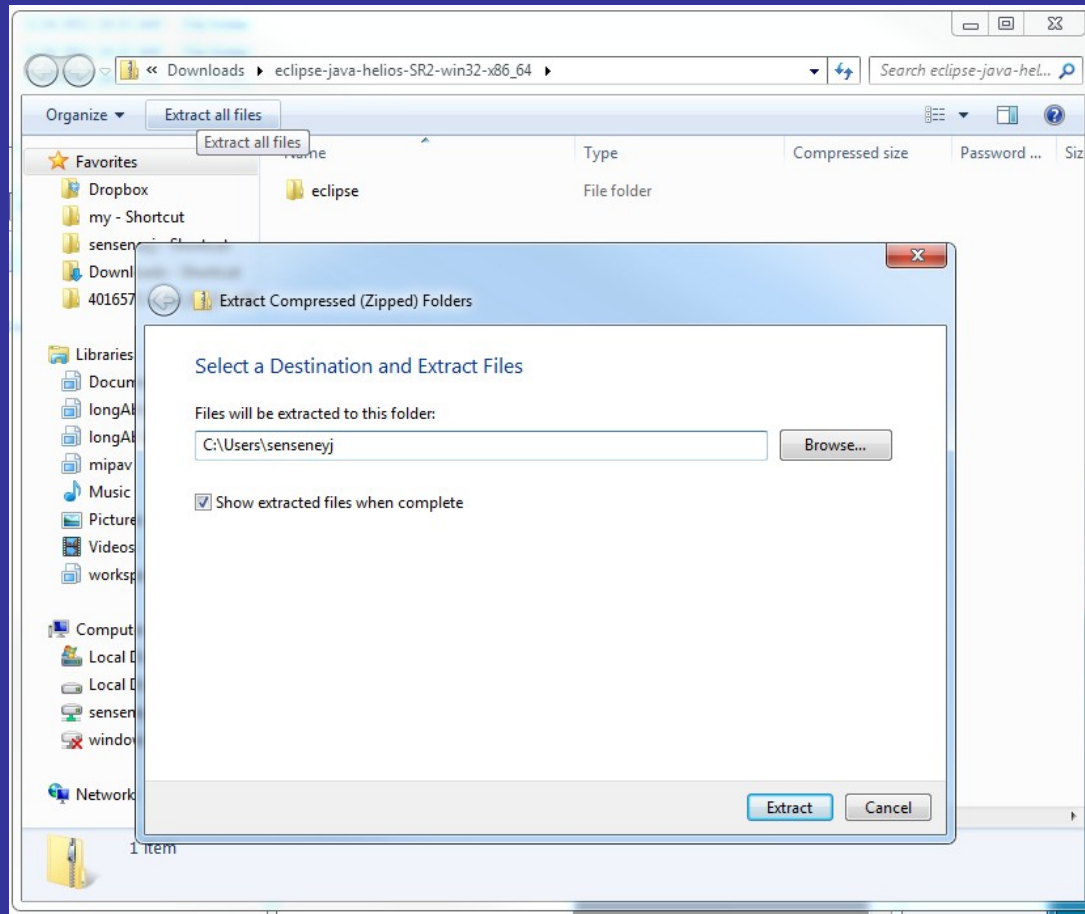
Download Eclipse

- Download here:
<http://www.eclipse.org/downloads/>

The screenshot shows the Eclipse Downloads page. The main heading is "Eclipse Downloads". Below it are tabs for "Packages", "Developer Builds", and "Projects". Under "Packages", there are sub-tabs for "Compare Packages", "Older Versions", and "Eclipse Helios (3.6.2) Packages for Windows". The "Eclipse IDE for Java Developers" package is highlighted, showing it is 99 MB and has been downloaded 1,478,422 times. The download links for "Windows 32 Bit" and "Windows 64 Bit" are visible. Red arrows point to the package icon and the "Windows 64 Bit" download link.

Package	Size	Downloads	Details	Download Links
Eclipse IDE for Java Developers	99 MB	Downloaded 1,478,422 Times	Details	Windows 32 Bit Windows 64 Bit
Eclipse IDE for Java EE Developers	206 MB	Downloaded 1,089,170 Times	Details	Windows 32 Bit Windows 64 Bit
Eclipse Classic 3.6.2	171 MB	Downloaded 822,124 Times	Details	Other Downloads Windows 32 Bit Windows 64 Bit

“Install” Eclipse



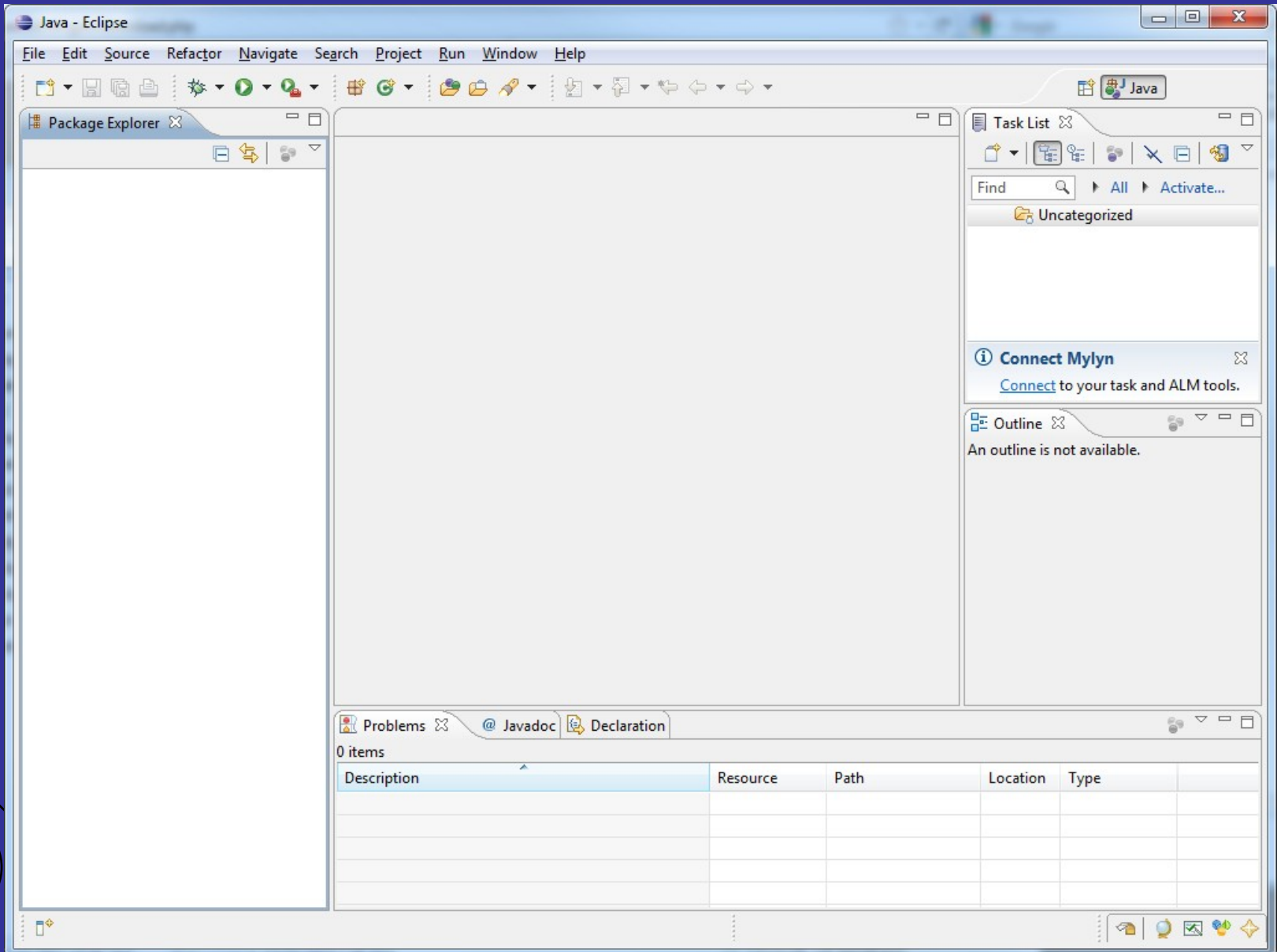
Fix Eclipse

```
-startup
plugins/org.eclipse.equinox.launcher_1.1.1.R36x_v20101122_
1400.jar
--launcher.library
plugins/org.eclipse.equinox.launcher.win32.win32.x86_64_
1.1.2.R36x_v20101222
-product
org.eclipse.epp.package.java.product
--launcher.defaultAction
openFile
--launcher.XXMaxPermSize
256M
-showsplash
org.eclipse.platform
--launcher.XXMaxPermSize
256m
--launcher.defaultAction
openFile
-vmargs
-Dosgi.requiredJavaVersion=1.5
-Xms512m
-Xmx2048m
```

Specify Memory



Start Eclipse



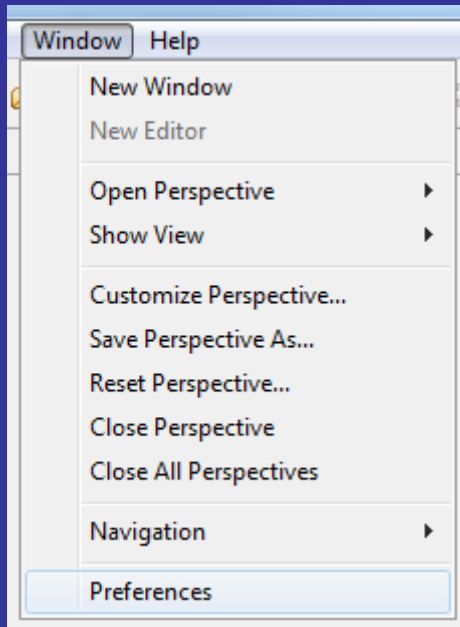
Java Programs

- Virtual machine = platform independent
- JRE to execute

```
cmd Select C:\Windows\system32\cmd.exe
CMD LINE: "C:\PROGRA~1\mipav531\jre\bin\java.exe" -server -classpath "C:\PROGRA~1\mipav531\.;C:\PROGRA~1\mipav531\help\mipav_help.jar;C:\PROGRA~1\mipav531\InsightToolkit\lib\InsightToolkit\InsightToolkit.jar;C:\PROGRA~1\mipav531\lib\JimiProClasses.jar;C:\PROGRA~1\mipav531\lib\jaxp\dom.jar;C:\PROGRA~1\mipav531\lib\jaxp\sax.jar;C:\PROGRA~1\mipav531\lib\jaxp\axalan.jar;C:\PROGRA~1\mipav531\lib\jaxp\xercesImpl.jar;C:\PROGRA~1\mipav531\lib\tar.jar;C:\PROGRA~1\mipav531\lib\jdom.jar;C:\PROGRA~1\mipav531\lib\junit-4.4.jar;C:\PROGRA~1\mipav531\lib\WildMagic.jar;C:\PROGRA~1\mipav531\lib\jj2kpack.jar;C:\PROGRA~1\mipav531\lib\jhall.jar;C:\PROGRA~1\mipav531\lib\ACCESSION_client_UTool.jar;C:\PROGRA~1\mipav531\lib\axiom-api-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-dom-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-impl-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axis2-kernel-1.2.jar;C:\PROGRA~1\mipav531\lib\bcprov-jdk15-136.jar;C:\PROGRA~1\mipav531\lib\commons-codec-1.3.jar;C:\PROGRA~1\mipav531\lib\commons-httpclient-3.0.1.jar;C:\PROGRA~1\mipav531\lib\commons-logging-1.1.1.jar;C:\PROGRA~1\mipav531\lib\jax-gnome.jar;C:\PROGRA~1\mipav531\lib\jaxen-1.1-beta-10.jar;C:\PROGRA~1\mipav531\lib\neethi-2.0.1.jar;C:\PROGRA~1\mipav531\lib\rampart-core-ndar-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-policy-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-trust-1.2.jar;C:\PROGRA~1\mipav531\lib\wsdl4j-1.6.2.jar;C:\PROGRA~1\mipav531\lib\wss4j-1.5.2.jar;C:\PROGRA~1\mipav531\lib\wstx-asl-3.2.1.jar;C:\PROGRA~1\mipav531\lib\XmlSchema-1.3.1.jar;C:\PROGRA~1\mipav531\lib\xmlsec-1.4.0.jar;C:\PROGRA~1\mipav531\lib\pdfbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jempbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\fontbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jTEM.jar;C:\PROGRA~1\mipav531\lib\TableLayout-bin-jdk1.5-2009-08-26.jar;C:\PROGRA~1\mipav531\lib\hyperapplet.jar;C:\PROGRA~1\mipav531\lib\lax.jar;C:\Users\sensenevj\mipav\plugins;C:\Users\sensenevj\mipav\plugins\plugins.jar" -Xms10485760000 -Xmx10485760000 MipavMain
```



JRE Setting



Add JRE

The screenshot shows the Eclipse IDE's Preferences dialog, specifically the 'Installed JREs' section. The 'Add JRE' dialog box is open, showing the 'JRE Type' selection screen. The 'Standard VM' option is selected in the list of installed JRE types.

Installed JREs

Add, remove or edit JRE definitions. By default, the checked JRE is added to the build path of newly created Java projects.

Installed JREs:

Name	Location	Type
<input checked="" type="checkbox"/> jre6	C:\Program Files\Java\jre6	Standard VM

Add JRE

JRE Type

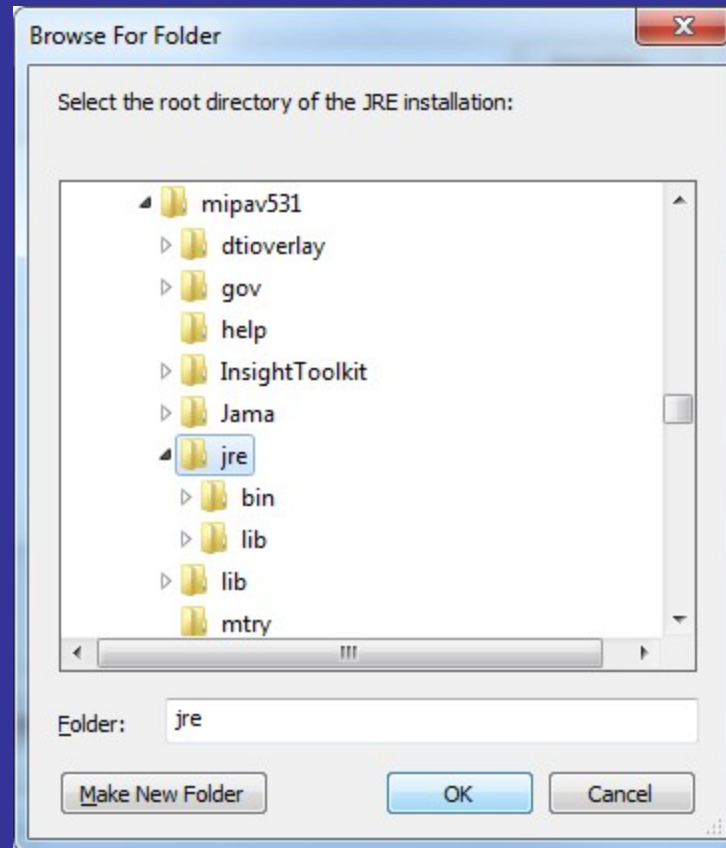
Select the type of JRE to add to the workspace.

Installed JRE Types:

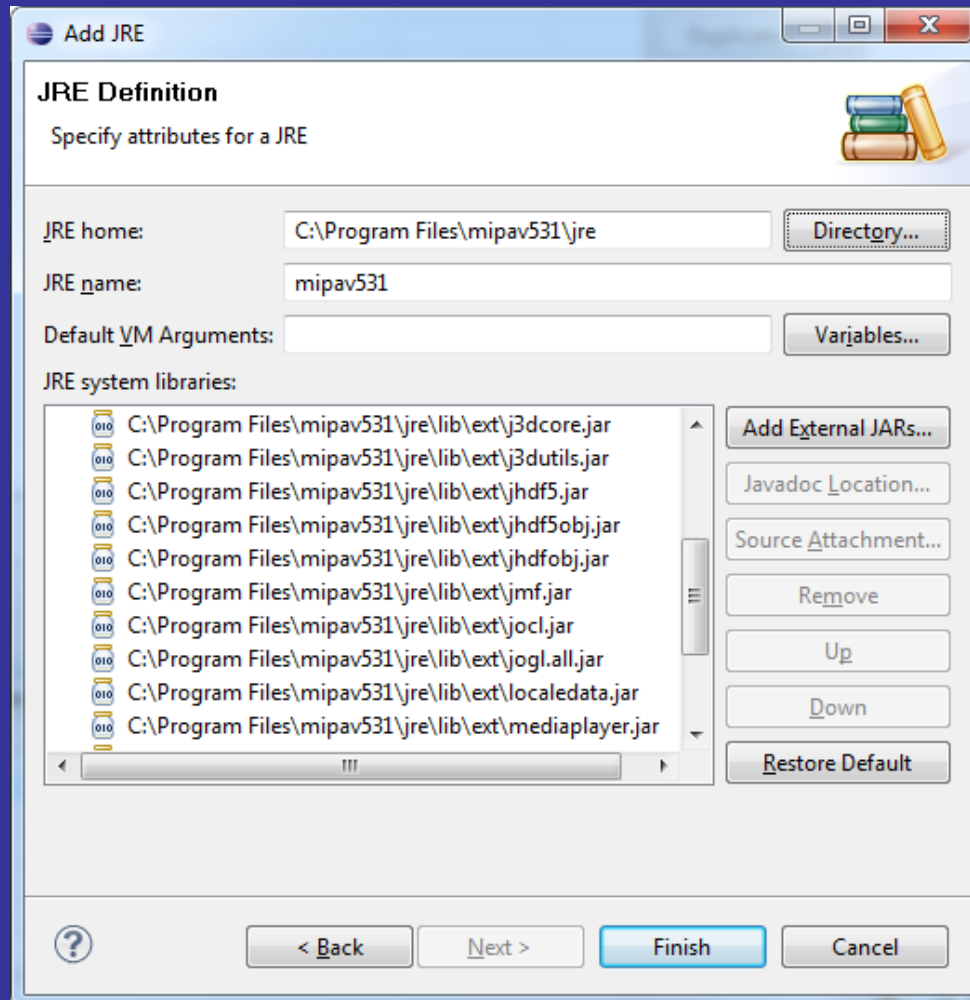
- Execution Environment Description
- Standard 1.1.x VM
- Standard VM**

< Back Next > Finish Cancel

Locate JRE



Locate JRE





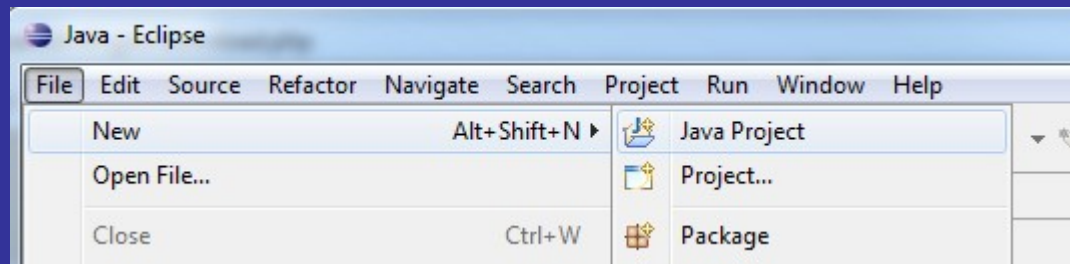
Eclipse project

- Mipav
 - Java project
 - Contains plugins





Make Mipav Project



Make Mipav Project

New Java Project

Create a Java Project

Create a Java project in the workspace or in an external location.

Project name: mipav

Use default location

Location: C:\Users\sensenej\workspace\mipav Browse...

JRE

Use an execution environment JRE: JavaSE-1.6

Use a project specific JRE: mipav531

Use default JRE (currently 'jre6') [Configure JREs...](#)

Project layout

Use project folder as root for sources and class files

Create separate folders for sources and class files [Configure default...](#)

Working sets

Add project to working sets

Working sets: Select...

< Back Next > Finish Cancel

← Specify JRE

Mipav Program

- Execution environment needs to be replicated

```
cmd Select C:\Windows\system32\cmd.exe
CMD LINE: "C:\PROGRA~1\mipav531\jre\bin\java.exe" -server -classpath "C:\PROGRA~1\mipav531\.;C:\PROGRA~1\mipav531\help\mipav_help.jar;C:\PROGRA~1\mipav531\InsightToolkit\lib\InsightToolkit\InsightToolkit.jar;C:\PROGRA~1\mipav531\lib\JimiPoroClasses.jar;C:\PROGRA~1\mipav531\lib\jaxp\dom.jar;C:\PROGRA~1\mipav531\lib\jaxp\sax.jar;C:\PROGRA~1\mipav531\lib\jaxp\jaxalan.jar;C:\PROGRA~1\mipav531\lib\jaxp\xercesImpl.jar;C:\PROGRA~1\mipav531\lib\tar.jar;C:\PROGRA~1\mipav531\lib\jdom.jar;C:\PROGRA~1\mipav531\lib\junit-4.4.jar;C:\PROGRA~1\mipav531\lib\WildMagic.jar;C:\PROGRA~1\mipav531\lib\jj2kpack.jar;C:\PROGRA~1\mipav531\lib\jhall.jar;C:\PROGRA~1\mipav531\lib\ACCESSION_client_UTool.jar;C:\PROGRA~1\mipav531\lib\axiom-api-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-dom-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-impl-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axis2-kernel-1.2.jar;C:\PROGRA~1\mipav531\lib\bcprov-jdk15-136.jar;C:\PROGRA~1\mipav531\lib\commons-codec-1.3.jar;C:\PROGRA~1\mipav531\lib\commons-httpclient-3.0.1.jar;C:\PROGRA~1\mipav531\lib\commons-logging-1.1.1.jar;C:\PROGRA~1\mipav531\lib\jax-gnome.jar;C:\PROGRA~1\mipav531\lib\jaxen-1.1-beta-10.jar;C:\PROGRA~1\mipav531\lib\neethi-2.0.1.jar;C:\PROGRA~1\mipav531\lib\rampart-core-ndar-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-policy-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-trust-1.2.jar;C:\PROGRA~1\mipav531\lib\wsdl4j-1.6.2.jar;C:\PROGRA~1\mipav531\lib\wss4j-1.5.2.jar;C:\PROGRA~1\mipav531\lib\wstx-asl-3.2.1.jar;C:\PROGRA~1\mipav531\lib\XmlSchema-1.3.1.jar;C:\PROGRA~1\mipav531\lib\xmlsec-1.4.0.jar;C:\PROGRA~1\mipav531\lib\pdfbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jempbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\fontbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jTEm.jar;C:\PROGRA~1\mipav531\lib\TableLayout-bin-jdk1.5-2009-08-26.jar;C:\PROGRA~1\mipav531\lib\hyperapplet.jar;C:\PROGRA~1\mipav531\lib\lax.jar;C:\Users\sensenevj\mipav\plugins;C:\Users\sensenevj\mipav\plugins\plugins.jar" -Xms10485760000 -Xmx10485760000 MipavMain
```




Execution environment

- Classpath
 - Libraries - jars
 - Associated class files
- Memory – used by VM
- Launching class file



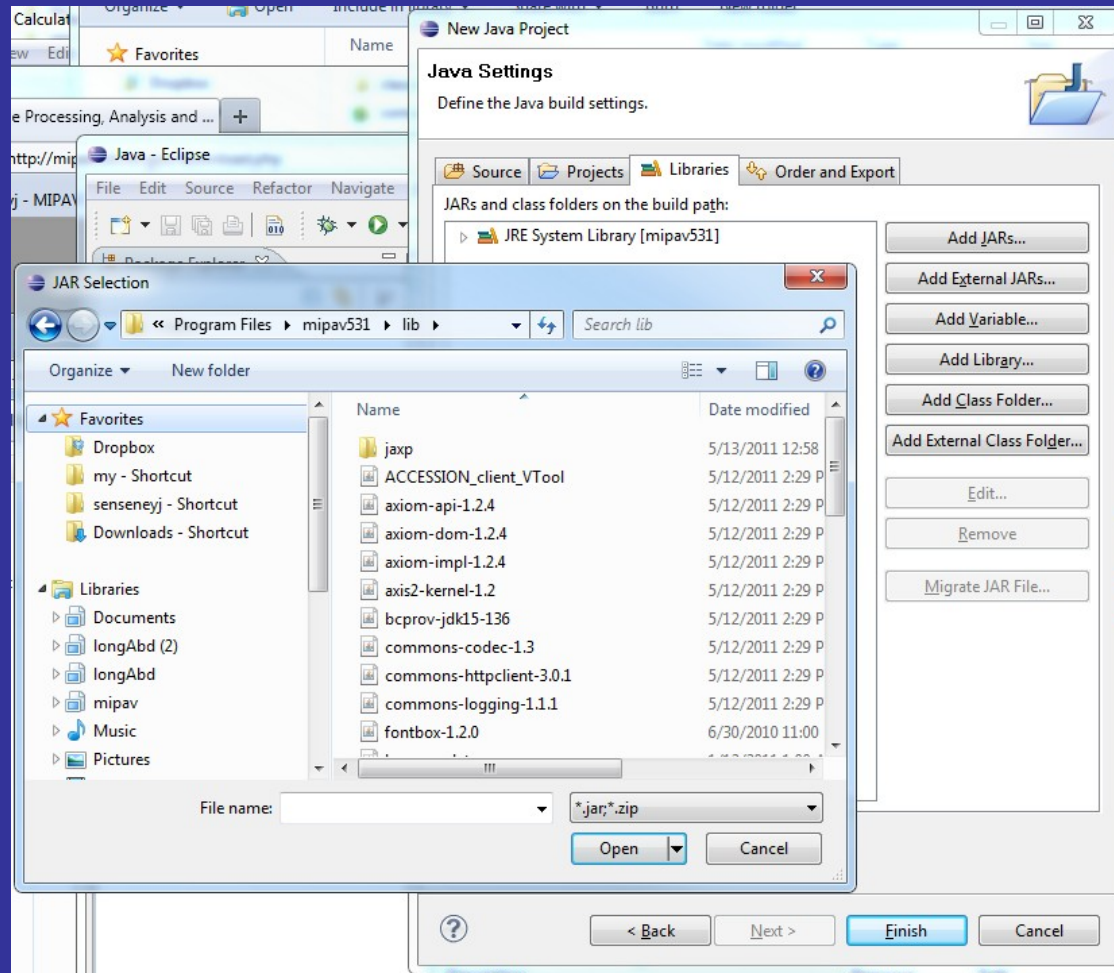


Jars

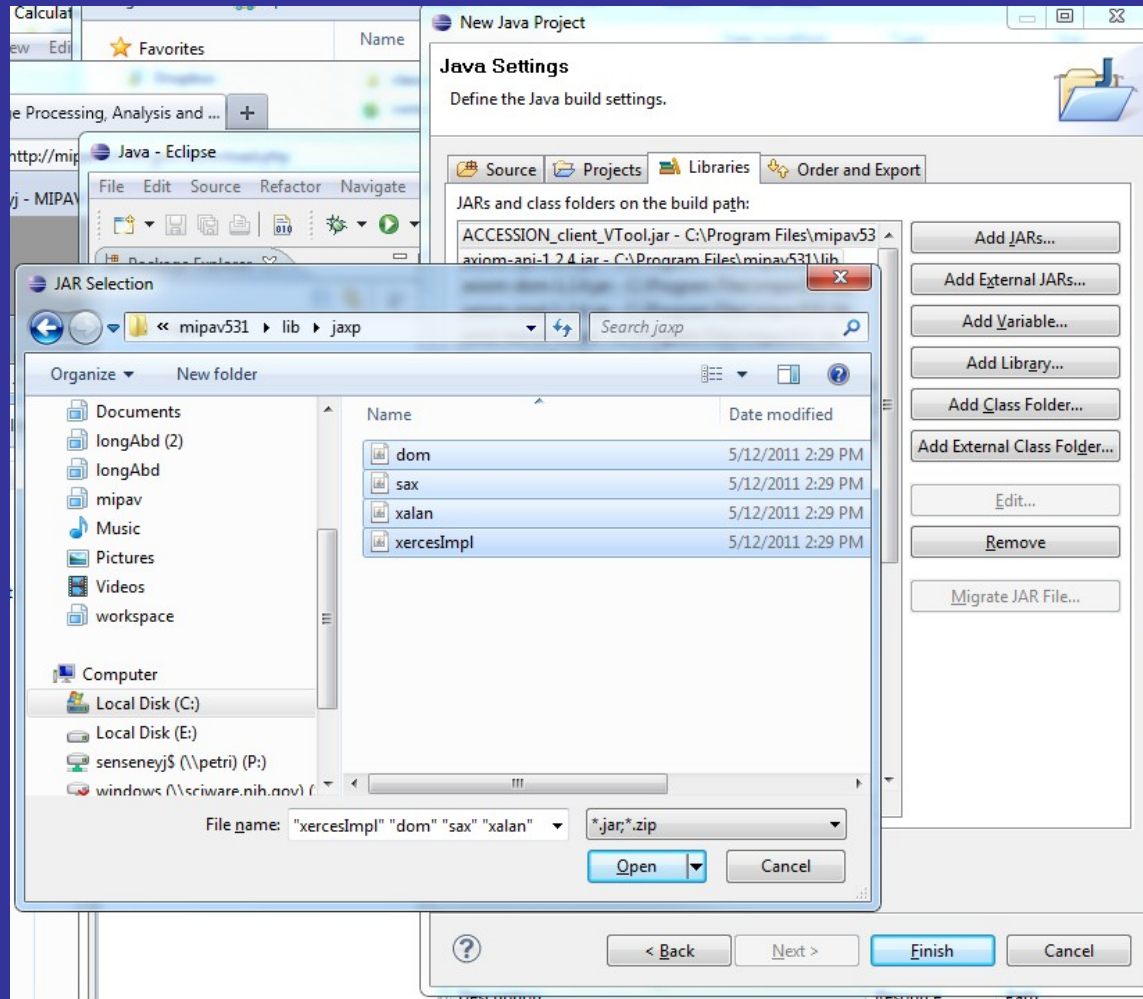
- Libraries
 - PDFbox
 - JPEG2000
 - ImageJ
- Help files
- Insight Toolkit wrappers



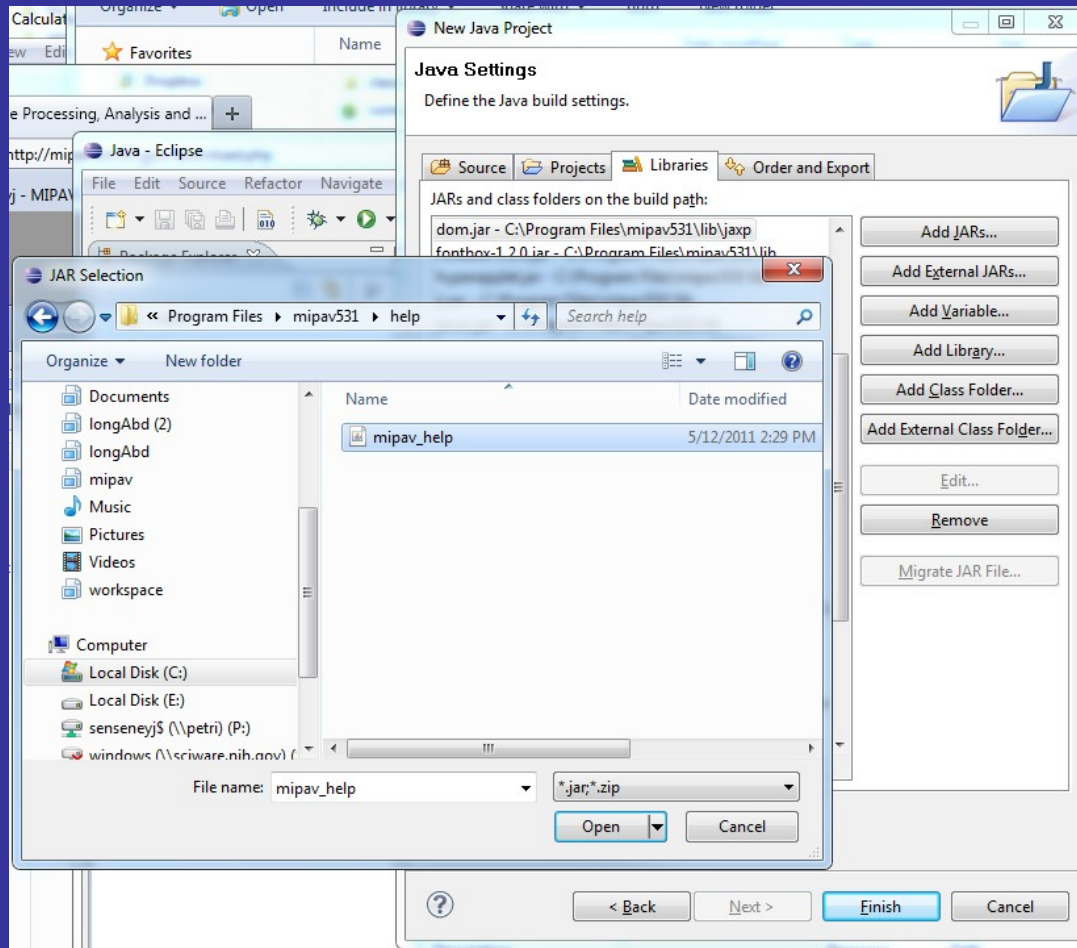
Add Jars



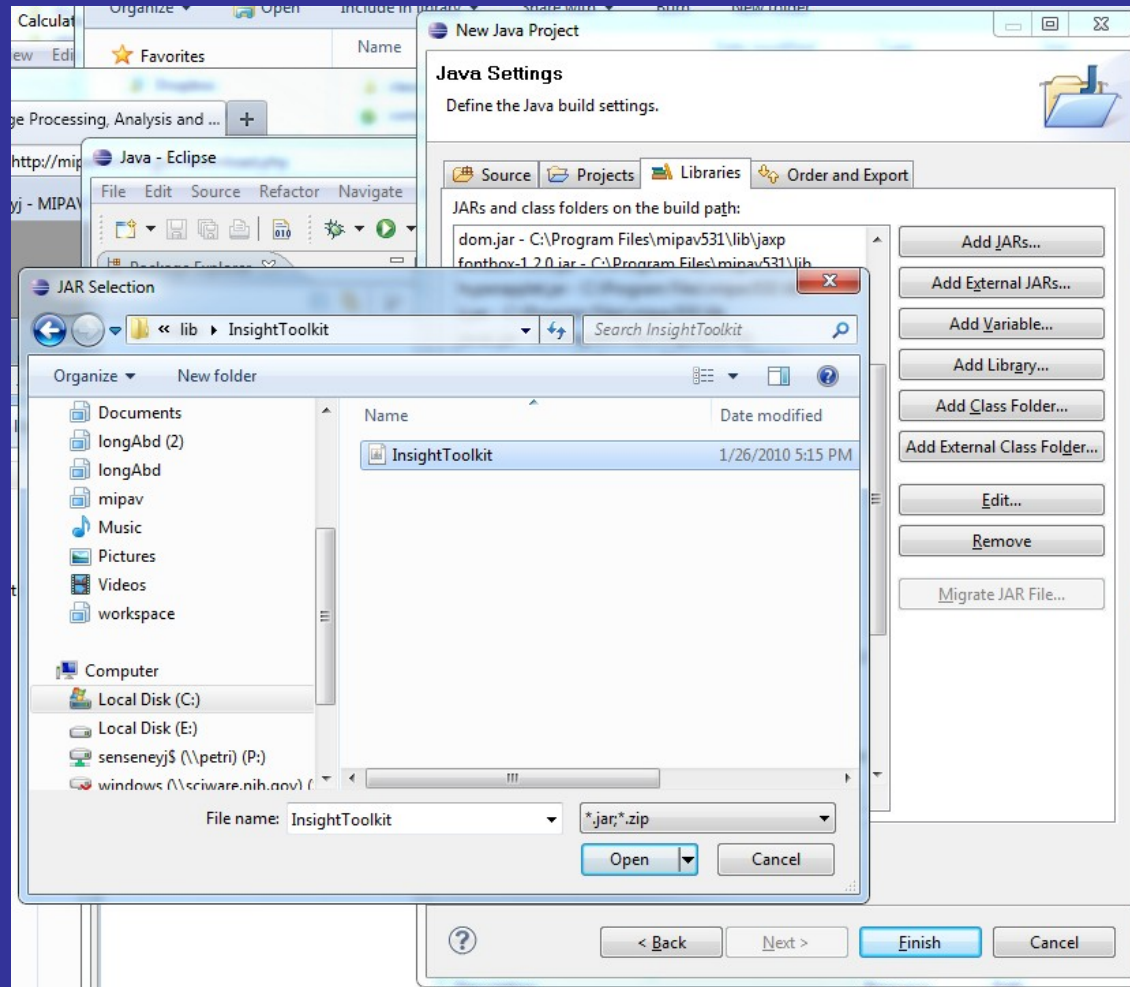
More Jars



More Jars: Help



More Jars: ITK

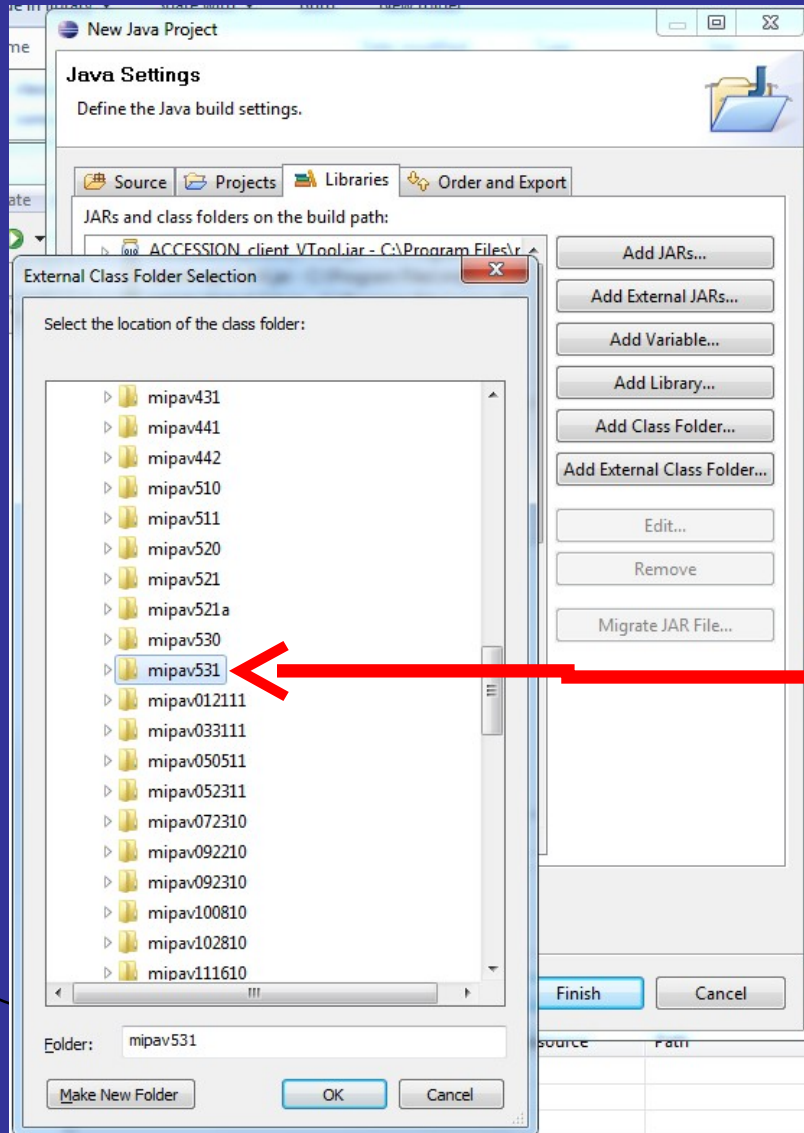


Class files

- Object-oriented
- Executable programs
- In Mipav:
 - Read/write images
 - Apply filters
 - Run plugins!



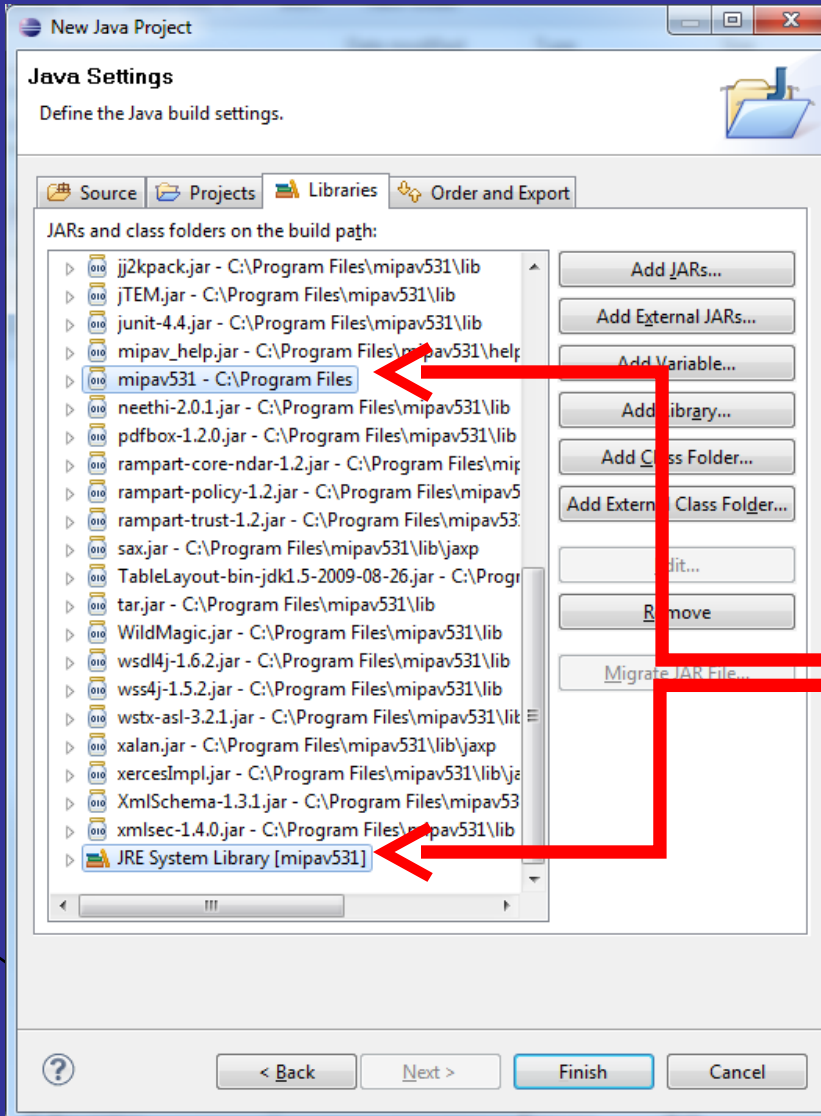
External class folder



Select the correct version of Mipav



Click Finish!



*Note class folder
and JRE
selection*

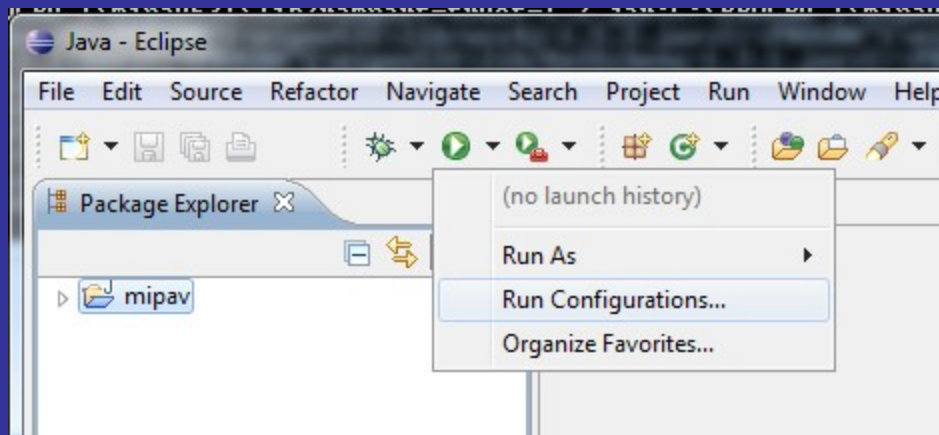


MipavMain

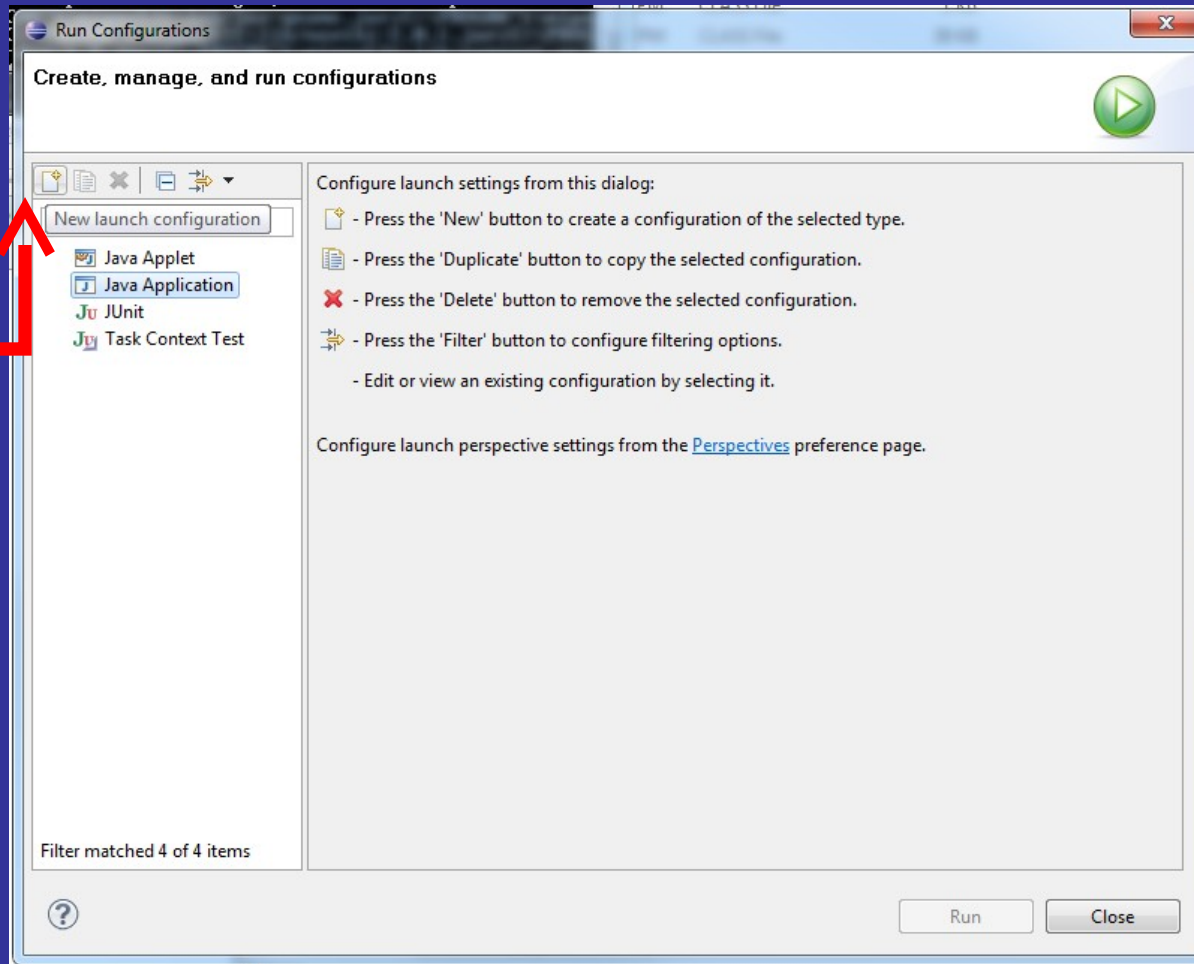
```
cmd Select C:\Windows\system32\cmd.exe
CMD LINE: "C:\PROGRA~1\mipav531\jre\bin\java.exe" -server -classpath "C:\PROGRA~1\mipav531\.;C:\PROGRA~1\mipav531\help\mipav_help.jar;C:\PROGRA~1\mipav531\InsightToolkit\lib\InsightToolkit\InsightToolkit.jar;C:\PROGRA~1\mipav531\lib\JimiP
roClasses.jar;C:\PROGRA~1\mipav531\lib\jaxp\dom.jar;C:\PROGRA~1\mipav531\lib\jaxp\sax.jar;C:\PROGRA~1\mipav531\lib\jaxp\jaxalan.jar;C:\PROGRA~1\mipav531\lib\jaxp\xercesImpl.jar;C:\PROGRA~1\mipav531\lib\tar.jar;C:\PROGRA~1\mipav531\lib\jdom.jar;C:\PROGRA~1\mipav531\lib\junit-4.4.jar;C:\PROGRA~1\mipav531\lib\WildMagic.jar;C:\PROGRA~1\mipav531\lib\jj2kpack.jar;C:\PROGRA~1\mipav531\lib\jhall.jar;C:\PROGRA~1\mipav531\lib\ACCESSION_client_UTool.jar;C:\PROGRA~1\mipav531\lib\axiom-api-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-dom-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axiom-impl-1.2.4.jar;C:\PROGRA~1\mipav531\lib\axis2-kernel-1.2.jar;C:\PROGRA~1\mipav531\lib\bcprov-jdk15-136.jar;C:\PROGRA~1\mipav531\lib\commons-codec-1.3.jar;C:\PROGRA~1\mipav531\lib\commons-httpclient-3.0.1.jar;C:\PROGRA~1\mipav531\lib\commons-logging-1.1.1.jar;C:\PROGRA~1\mipav531\lib\jax-gnome.jar;C:\PROGRA~1\mipav531\lib\jaxen-1.1-beta-10.jar;C:\PROGRA~1\mipav531\lib\neethi-2.0.1.jar;C:\PROGRA~1\mipav531\lib\rampart-core-ndar-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-policy-1.2.jar;C:\PROGRA~1\mipav531\lib\rampart-trust-1.2.jar;C:\PROGRA~1\mipav531\lib\wsdl4j-1.6.2.jar;C:\PROGRA~1\mipav531\lib\wss4j-1.5.2.jar;C:\PROGRA~1\mipav531\lib\wstx-asl-3.2.1.jar;C:\PROGRA~1\mipav531\lib\XmlSchema-1.3.1.jar;C:\PROGRA~1\mipav531\lib\xmlsec-1.4.0.jar;C:\PROGRA~1\mipav531\lib\pdfbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jempbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\fontbox-1.2.0.jar;C:\PROGRA~1\mipav531\lib\jTEm.jar;C:\PROGRA~1\mipav531\lib\TableLayout-bin-jdk1.5-2009-08-26.jar;C:\PROGRA~1\mipav531\lib\hyperapplet.jar;C:\PROGRA~1\mipav531\lib\lax.jar;C:\Users\sensenevj\mipav\plugins;C:\Users\sensenevj\mipav\plugins\plugins.jar" -Xms10485760000 -Xmx10485760000 MipavMain
```



Run Configuration



New Configuration



Select Main Type

The screenshot shows the 'Run Configurations' dialog box in an IDE. The main window is titled 'Run Configurations' and has a subtitle 'Create, manage, and run configurations'. A red error message at the top left says 'Main type not specified'. The 'Name' field is set to 'mipav'. The 'Main' tab is selected, showing fields for 'Project' (mipav) and 'Main class'. There are checkboxes for 'Include system libraries when searching for a main class', 'Include inherited mains when searching for a main class', and 'Stop in main'. A 'Select Main Type' sub-dialog is open in the foreground. It has a title bar 'Select Main Type' and a search prompt 'Select type (? = any character, * = any String, TZ = TimeZone):'. The search input field contains 'MipavMain'. Below the search field, there is a list of 'Matching items' with 'MipavMain - (default package)' selected. At the bottom of the sub-dialog are 'OK' and 'Cancel' buttons. The main dialog also has 'Apply', 'Revert', 'Run', and 'Close' buttons at the bottom.



Java Memory

-Xms (min), -Xmx (max)

```
cmd Select C:\Windows\system32\cmd.exe
CMD LINE: "C:\PROGRAM~1\mipav531\jre\bin\java.exe" -server -classpath "C:\PROGRA~1\mipav531\.;C:\PROGRAM~1\mipav531\help\mipav_help.jar;C:\PROGRAM~1\mipav531\InsightToolkit\lib\InsightToolkit.jar;C:\PROGRAM~1\mipav531\lib\JimiProClasses.jar;C:\PROGRAM~1\mipav531\lib\jaxp\dom.jar;C:\PROGRAM~1\mipav531\lib\jaxp\sax.jar;C:\PROGRAM~1\mipav531\lib\jaxp\xalan.jar;C:\PROGRAM~1\mipav531\lib\jaxp\xercesImpl.jar;C:\PROGRAM~1\mipav531\lib\tar.jar;C:\PROGRAM~1\mipav531\lib\jdom.jar;C:\PROGRAM~1\mipav531\lib\junit-4.4.jar;C:\PROGRAM~1\mipav531\lib\WildMagic.jar;C:\PROGRAM~1\mipav531\lib\jj2kpack.jar;C:\PROGRAM~1\mipav531\lib\jhall.jar;C:\PROGRAM~1\mipav531\lib\ACCESSION_client_UTool.jar;C:\PROGRAM~1\mipav531\lib\axiom-api-1.2.4.jar;C:\PROGRAM~1\mipav531\lib\axiom-dom-1.2.4.jar;C:\PROGRAM~1\mipav531\lib\axiom-impl-1.2.4.jar;C:\PROGRAM~1\mipav531\lib\axis2-kernel-1.2.jar;C:\PROGRAM~1\mipav531\lib\bcprov-jdk15-136.jar;C:\PROGRAM~1\mipav531\lib\commons-codec-1.3.jar;C:\PROGRAM~1\mipav531\lib\commons-httpclient-3.0.1.jar;C:\PROGRAM~1\mipav531\lib\commons-logging-1.1.1.jar;C:\PROGRAM~1\mipav531\lib\jax-gname.jar;C:\PROGRAM~1\mipav531\lib\jaxen-1.1-beta-10.jar;C:\PROGRAM~1\mipav531\lib\neethi-2.0.1.jar;C:\PROGRAM~1\mipav531\lib\rampart-core-ndar-1.2.jar;C:\PROGRAM~1\mipav531\lib\rampart-policy-1.2.jar;C:\PROGRAM~1\mipav531\lib\rampart-trust-1.2.jar;C:\PROGRAM~1\mipav531\lib\wsdl4j-1.6.2.jar;C:\PROGRAM~1\mipav531\lib\wss4j-1.5.2.jar;C:\PROGRAM~1\mipav531\lib\wstx-asl-3.2.1.jar;C:\PROGRAM~1\mipav531\lib\XmlSchema-1.3.1.jar;C:\PROGRAM~1\mipav531\lib\xmlsec-1.4.0.jar;C:\PROGRAM~1\mipav531\lib\pdfbox-1.2.0.jar;C:\PROGRAM~1\mipav531\lib\jempbox-1.2.0.jar;C:\PROGRAM~1\mipav531\lib\fontbox-1.2.0.jar;C:\PROGRAM~1\mipav531\lib\jTEM.jar;C:\PROGRAM~1\mipav531\lib\TableLayout-bin-jdk1.5-2009-08-26.jar;C:\PROGRAM~1\mipav531\lib\hyperapplet.jar;C:\PROGRAM~1\mipav531\lib\lax.jar;C:\Users\sensenevj\mipav\plugins;C:\Users\sensenevj\mipav\plugins\plugin_s.jar" -Xms10485760000 -Xmx10485760000 MipavMain
```



Memory

The screenshot shows the 'Run Configurations' dialog box for a Java application named 'mipav'. The dialog is titled 'Create, manage, and run configurations' and 'Run a Java application'. On the left, a tree view shows the configuration hierarchy: Java Application > mipav. The main area has tabs for 'Main', 'Arguments', 'JRE', 'Classpath', 'Source', 'Environment', and 'Common'. The 'Main' tab is active, showing the following settings:

- Name:** mipav
- Program arguments:** (Empty text area)
- VM arguments:** -Xms5120m -Xmx5120m
- Working directory:** Default: \${workspace_loc:mipav} Other: (Empty text area)

Buttons at the bottom include 'Apply', 'Revert', 'Run', and 'Close'. A status bar at the bottom left indicates 'Filter matched 5 of 5 items'.





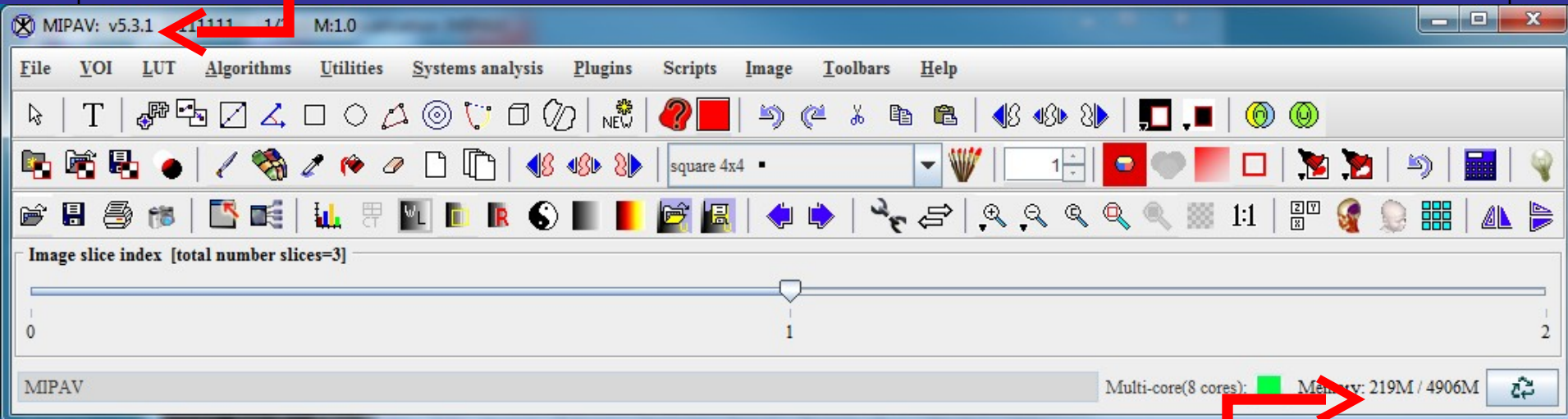
Run Mipav

- MipavMain is executed
 - Classpath is set
 - Memory allocated
 - Libraries are referenced



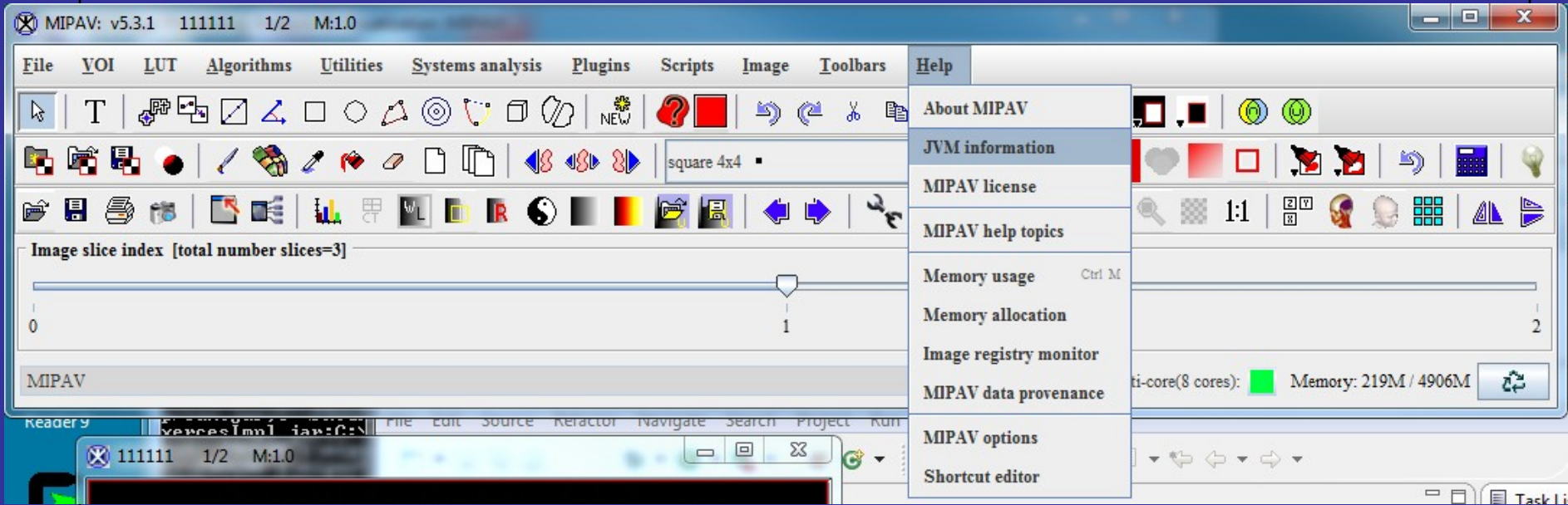
Mipav Launched

Version number

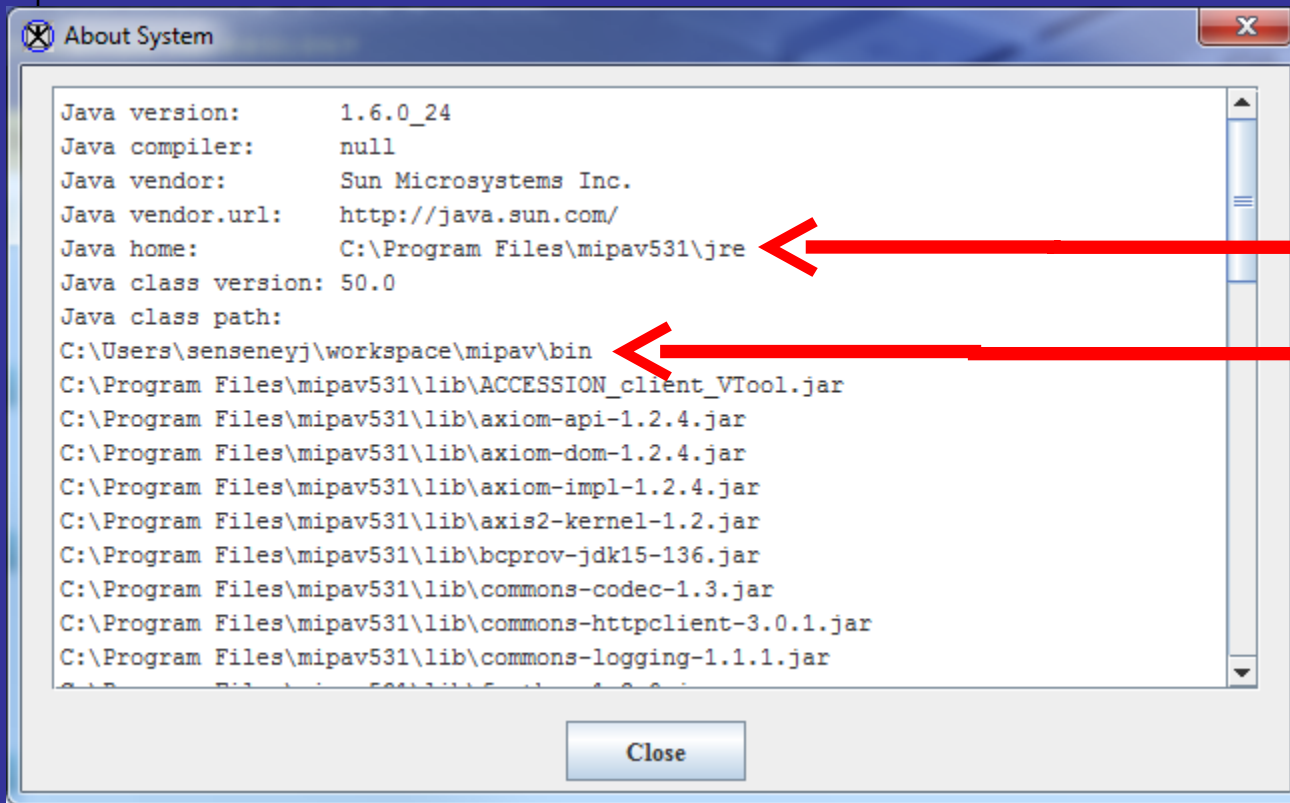


VM Memory

View JVM Info



JVM Info



JRE in mipav

Plugin folder in workspace



Java Compiler

- Source code:
 - *.java files
 - Text-editor readable
- Platform independent byte-code:
 - *.class files





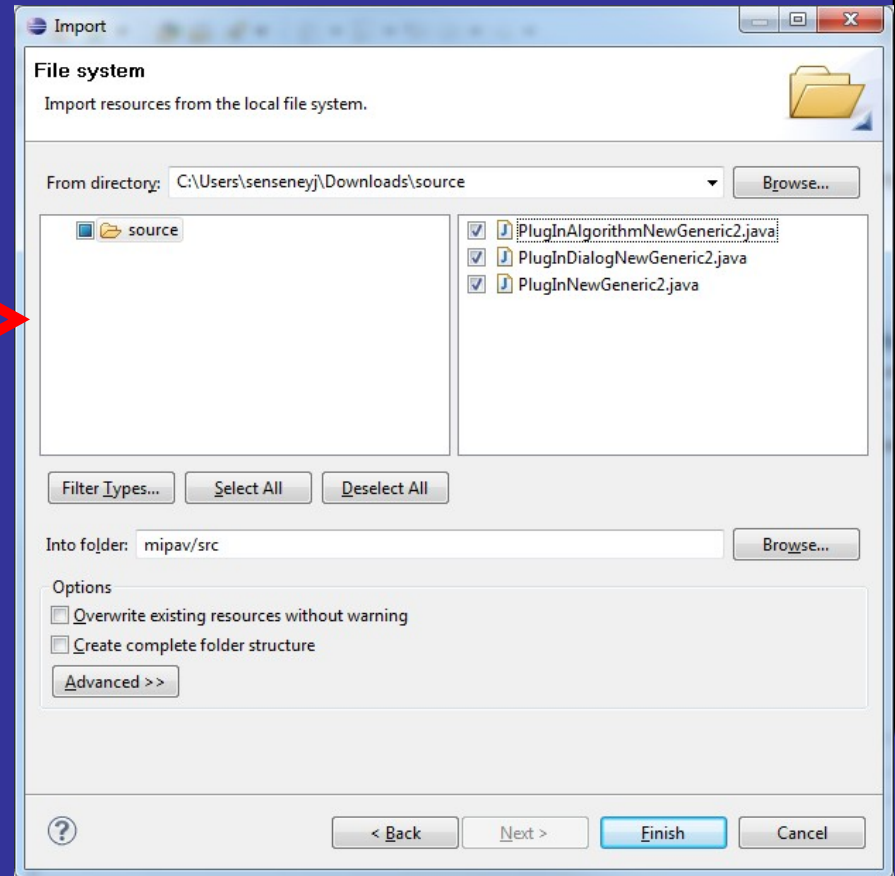
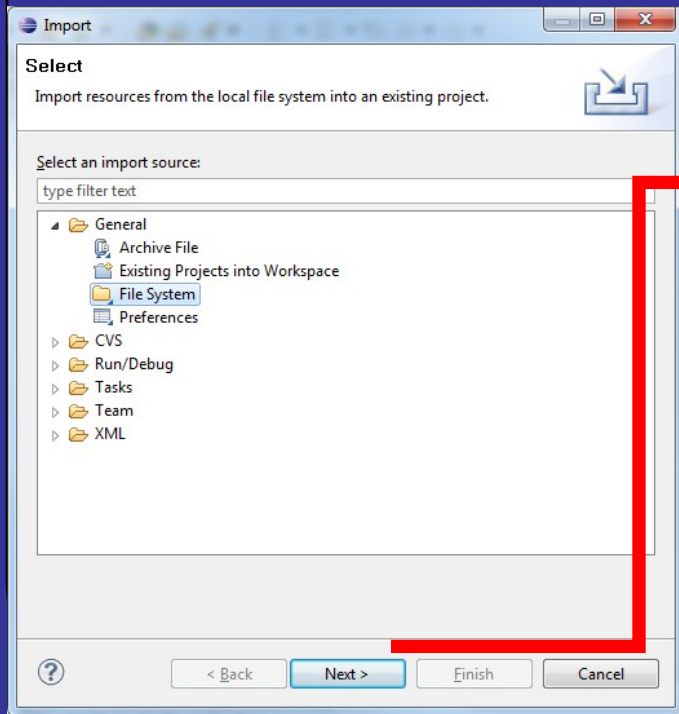
Get NewGeneric2

- Download three files from <http://dcb.cit.nih.gov/~sensenej/code/plugin.html>
 - PlugInNewGeneric2.java
 - PlugInDialogNewGeneric2.java
 - PlugInAlgorithmNewGeneric2.java



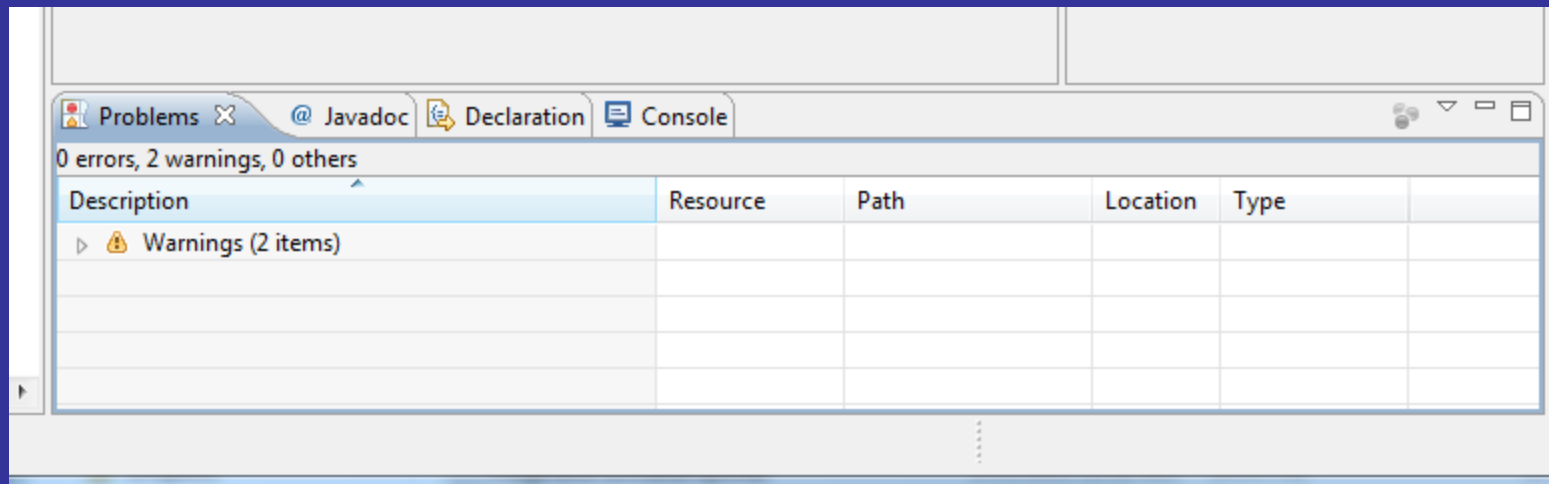
Import NewGeneric2

- In Eclipse: Press File->Import



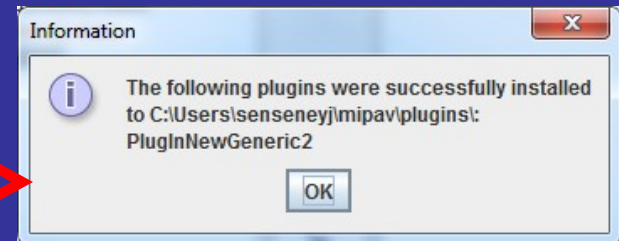
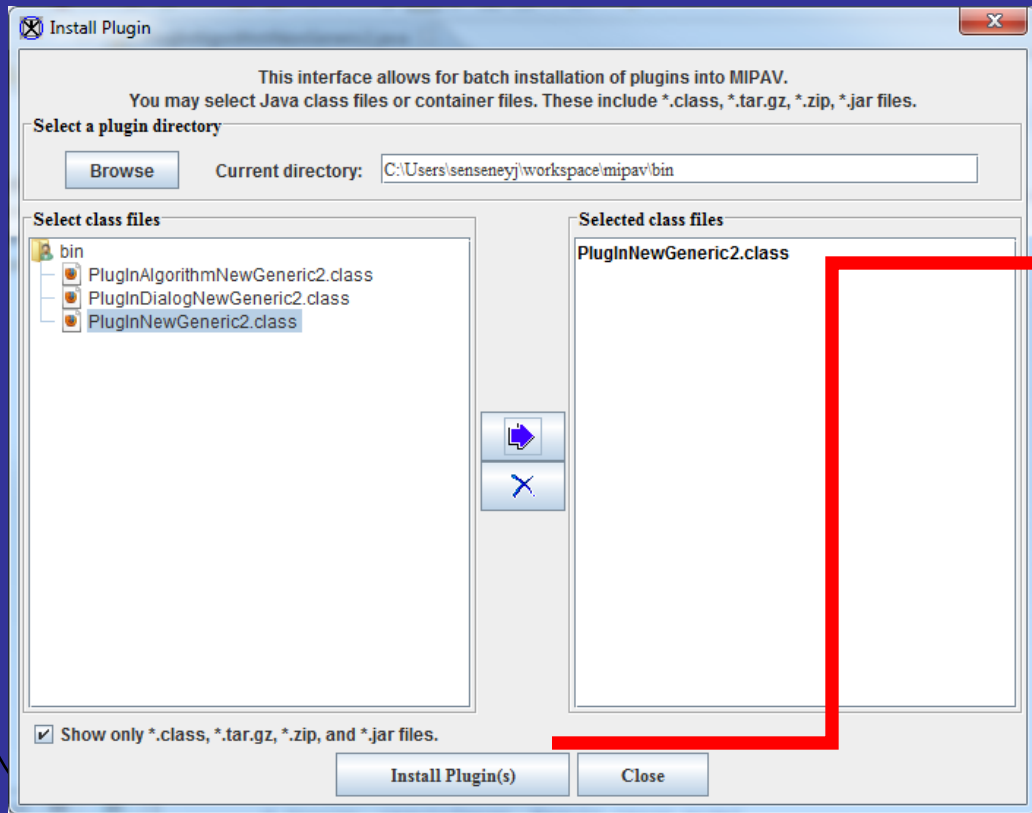
Compile NewGeneric2

- This is done for you, incrementally in Eclipse
 - Errors and warnings update with each change



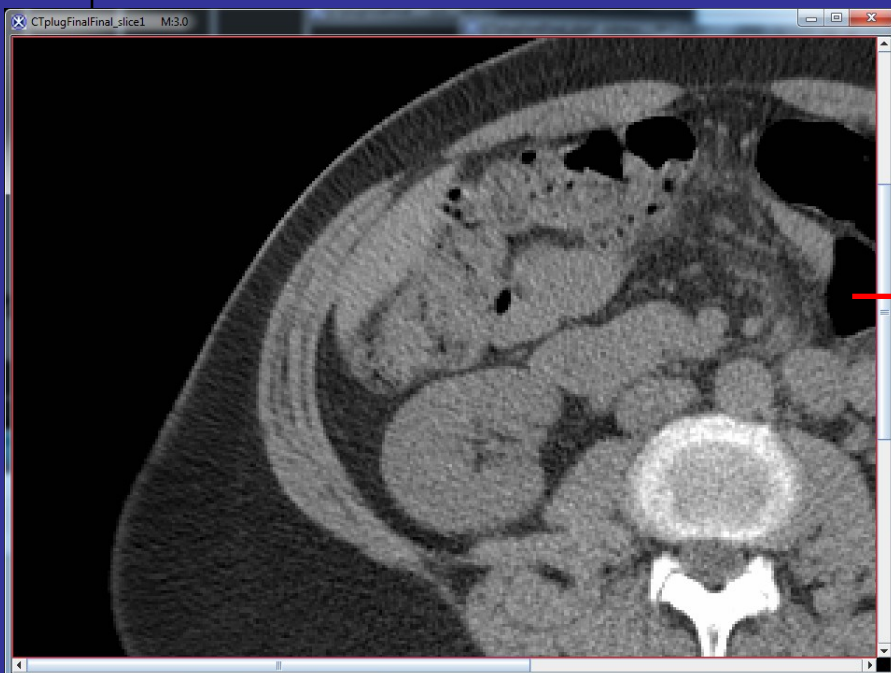
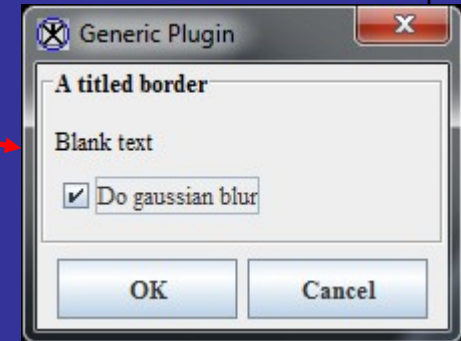
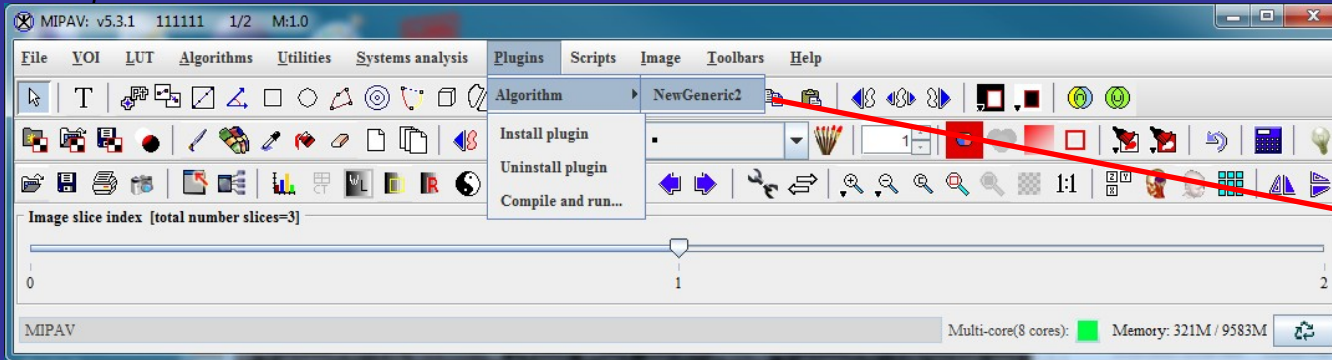
Install NewGeneric2

- Only install PlugInNewGeneric2.class



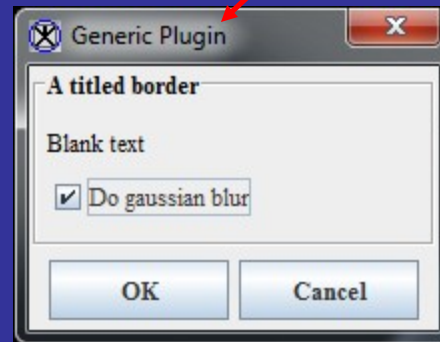
Why did this work?

Run NewGeneric2



Look at NewGeneric2

- Open Dialog, try to change the title “Generic Plugin”





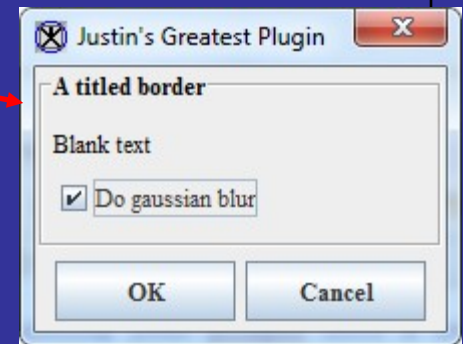
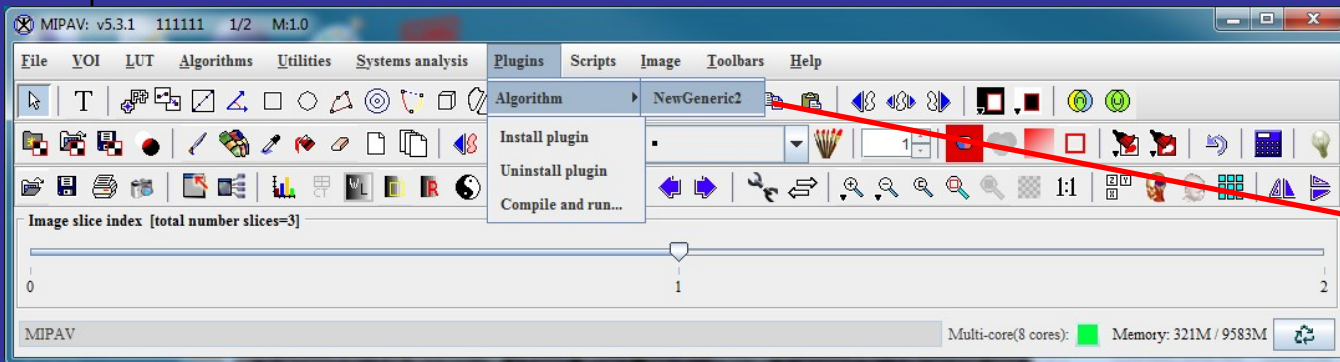
Change NewGeneric2

Location:

The screenshot displays the Eclipse IDE interface. The Package Explorer on the left shows the project structure: mipav > src > (default package) > PlugInDialogNewGeneric2.java. The main editor window shows the source code for PlugInDialogNewGeneric2.java. The code includes a comment: `/** * Used in turning your plugin into a script */`. The `storeParamsFromGUI()` method is protected and throws `ParserException`. It calls `scriptParameters.storeInputImage(image)` and `scriptParameters.getParams().put(ParameterFact)`. The `init()` method is private and sets the foreground to black, the title to "Justin's Greatest Plugin", and the icon image to `MipavUtil.getIconImage("divin")`. The Outline view on the right shows the class structure. The Console view at the bottom shows a debug message: `DEBUG: Starting options file cannot be found. Check path and filename.` followed by `Starting options file cannot be found. Check path and filename.` and `Hi`. The status bar at the bottom indicates the file is writable, smart insert is enabled, and the cursor is at line 232, column 36.

Run NewGeneric2

- See change:



NewGeneric Algorithm

- Look at algorithm construction, execution

```
Java - mipav/src/PlugInAlgorithmNewGeneric2.java - Eclipse
File Edit Source Refactor Navigate Search Project Run Window Help
P PlugInAlgorithmNewGeneric2.java PlugInNewGeneric2.java PlugInDialogNewGeneric2.java
97 fireProgressStateChanged("Message 2D: "+srcImage.getImageName());
98
99 if(doGaussian) {
100     final float[] sigmas = {1.0f, 1.0f};
101
102     AlgorithmGaussianBlur gaussianBlurAlgo = new AlgorithmGaussianBlur(destImage, srcImage,
103     gaussianBlurAlgo.setRunningInSeparateThread(false);
104     linkProgressToAlgorithm(gaussianBlurAlgo);
105     gaussianBlurAlgo.runAlgorithm();
106 }
107
108 for(int i=1; i<100; i++) {
109     fireProgressStateChanged(i);
110 }
```

Problems @ Javadoc Declaration Console

<terminated> mipav [Java Application] C:\Program Files\mipav531\jre\bin\javaw.exe (May 25, 2011 12:46:12 PM)
DEBUG: GetPath.getPath: Could not find mipav.app\Contents\Info.plist. Checked C:\Users\senseneyj\works
DEBUG: Starting options file cannot be found. Check path and filename.
Starting options file cannot be found. Check path and filename.

Writable Smart Insert 30:49

MIPAV Documentation

- CTRL-click on run algorithm, now try hovering:

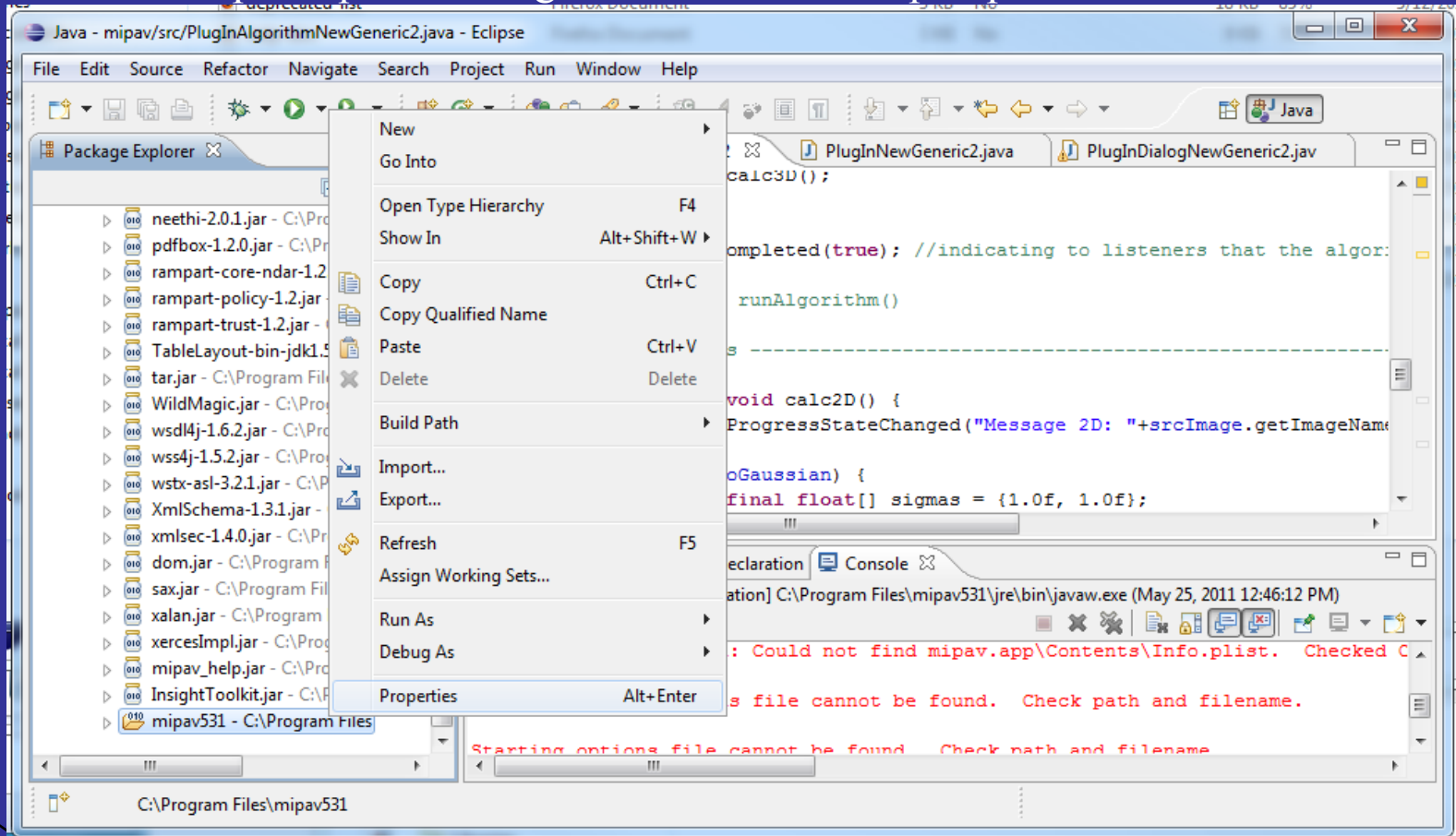
The screenshot shows the Eclipse IDE interface. The main window is titled "Java - gov.nih.mipav.model.algorithms.AlgorithmBase - Eclipse". The menu bar includes File, Edit, Source, Refactor, Navigate, Search, Project, Run, Window, and Help. The toolbar contains various icons for file operations and development tools. The left sidebar shows a project tree with "mipav" and "src" folders. The main editor area is titled "Class File Editor" and displays the source code for "AlgorithmBase.class". A message box indicates "Source not found" for the JAR file "C:\Program Files\mipav531". Below this message is an "Attach Source..." button. The code snippet shows a public abstract class declaration: `public abstract class gov.nih.mipav.model.algorithms.AlgorithmBase extends java.lang.Thread implements java.awt.event.ActionListener, java.awt.event.Wi...`. The bottom panel shows the "Console" window with the following output:

```
<terminated> mipav [Java Application] C:\Program Files\mipav531\jre\bin\javaw.exe (May 25, 2011 12:46:12 PM)
DEBUG: GetPath.getPath: Could not find mipav.app\Contents\Info.plist. Checked C:\Users\sensenej\works:
DEBUG: Starting options file cannot be found. Check path and filename.
Starting options file cannot be found. Check path and filename.
```

Plugins - MIPAV API

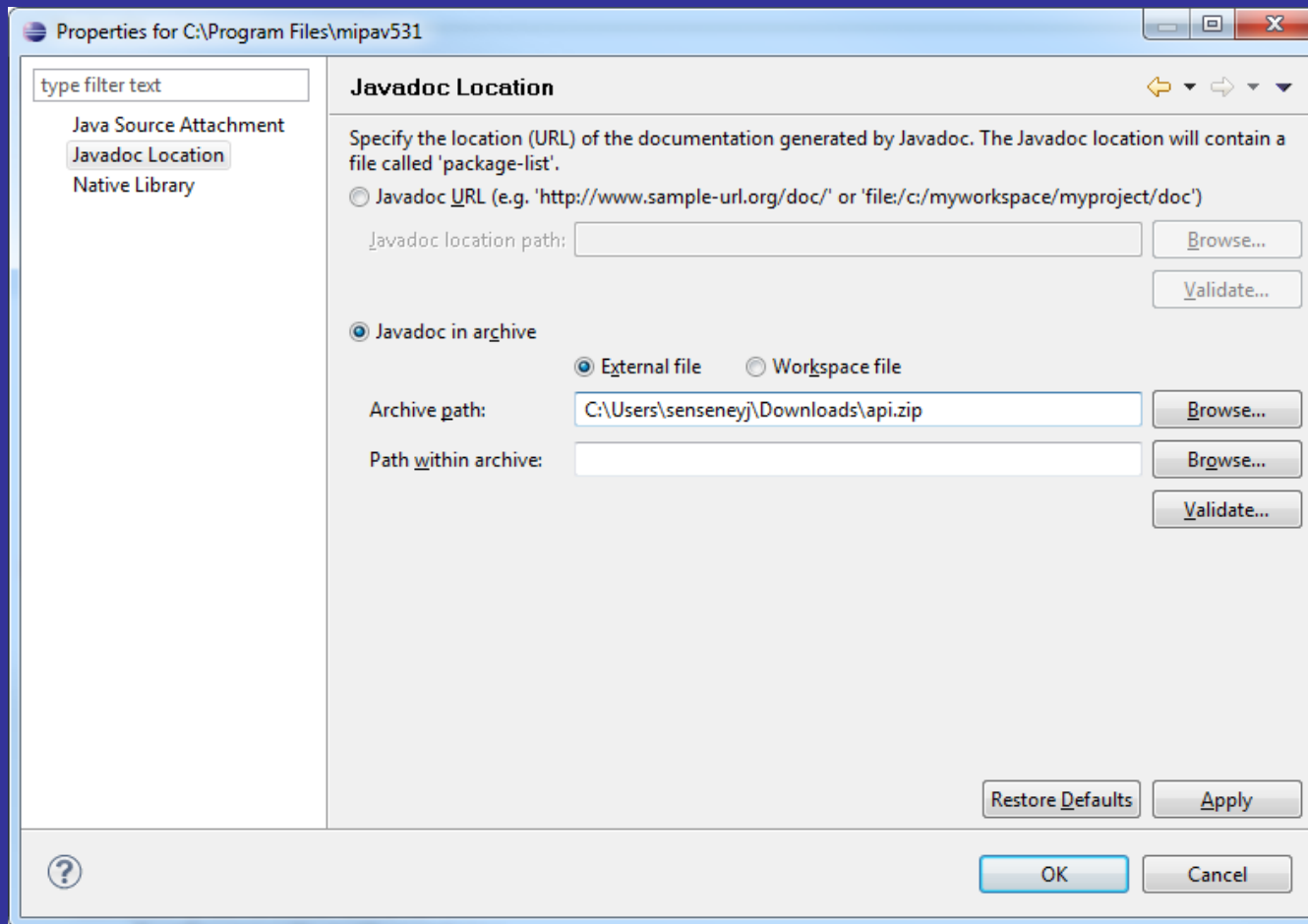
Download from:

<http://mipav.cit.nih.gov/documentation/api.zip>



Plugins - MIPAV API

Attach here:





Plugins - MIPAV API

View here:

Firefox

Overview (MIPAV API Documentation)

http://mipav.cit.nih.gov/documentation/api/index.html

User:Senseenyj - MIPAV Medical Image Proces... Biowulf at the NIH Overview (MIPAV API ... Java Platform SE 6 The Sheridan Libraries ... DCB - DIVISION OF C...

All Classes

Packages

[gov.nih.mipav.model](#)

[gov.nih.mipav.model.algorithms](#)

[gov.nih.mipav.model.algorithms.D](#)

[gov.nih.mipav.model.algorithms.fil](#)

[gov.nih.mipav.model.algorithms.fil](#)

[gov.nih.mipav.model.algorithms.itk](#)

All Classes

[ActionBase](#)

[ActionChangeEndianness](#)

[ActionChangeModality](#)

[ActionChangeName](#)

[ActionChangeOrientations](#)

[ActionChangeOrigin](#)

[ActionChangeResolutions](#)

[ActionChangeTalairachInfo](#)

[ActionChangeTransformInfo](#)

[ActionChangeUnits](#)

[ActionClone](#)

[ActionCloseFrame](#)

[ActionCollectGarbage](#)

[ActionCreateBlankImage](#)

[ActionDiscovery](#)

[ActionExit](#)

[ActionExtractImageB](#)

[ActionImageProcessorBase](#)

[ActionMaskToPaint](#)

[ActionMaskToVOI](#)

[ActionMetadata](#)

[ActionMetadata.ImageRequireme](#)

[ActionOpenAllVOIs](#)

Overview Package Class Tree Deprecated Index Help

PREV NEXT FRAMES NO FRAMES

Packages

gov.nih.mipav.model	
gov.nih.mipav.model.algorithms	
gov.nih.mipav.model.algorithms.DiffusionTensorImaging	
gov.nih.mipav.model.algorithms.filters	
gov.nih.mipav.model.algorithms.filters.OpenCL.filters	
gov.nih.mipav.model.algorithms.itk	
gov.nih.mipav.model.algorithms.levelset	
gov.nih.mipav.model.algorithms.registration	
gov.nih.mipav.model.algorithms.utilities	
gov.nih.mipav.model.dicomcomm	
gov.nih.mipav.model.file	
gov.nih.mipav.model.file.rawjp2	
gov.nih.mipav.model.provenance	
gov.nih.mipav.model.provenance.actions	
gov.nih.mipav.model.scripting	
gov.nih.mipav.model.scripting.actions	
gov.nih.mipav.model.scripting.parameters	
gov.nih.mipav.model.structures	
gov.nih.mipav.model.structures.event	This package carries the different events and listeners arranged around the structure Objects within MIPAV.
gov.nih.mipav.model.structures.ima	

zotero



IT



Modify Plugin Lab

- Edit PlugInNewGeneric2:

10pt

- Change text in plugin dialog.

10pt

- Print out when algorithm has completed.

10pt

- Increase kernel size.

20pt

- Change 3D to 2.5D processing.

80pt

- Add check box to allow user to select either 3D or 2.5D processing.





Plugins - Documentation

- Plugin development documentation

http://mipav.cit.nih.gov/documentation/userguide/volume1/MIPAV_PlugIns.pdf

- This presentation is posted at:

- <http://dcb.cit.nih.gov/~sensenej/code/plugin.html>

- Will also be posted here:

- <http://mipav.cit.nih.gov/documentation/presentations/>

- Also see this wiki page:

- http://mipav.cit.nih.gov/pubwiki/index.php/Writing_MIPAV_plugins_without_MIPAV_source





Summary

- Plugins
 - Unique functionality using MIPAV API
- Develop in Eclipse
- Use MIPAV API



Visualization

Processing

Macros

Quantification
File reader

File writer



MIPAV

Medical Image Processing, Analysis, & Visualization

