

Preparing a local computer for using the 3D browser to view TDR-3D models over internet.

Fons J. Verbeek.

Imaging & BioInformatics, LIACS

Leiden University, Leiden, the Netherlands.

Version 0, January 2010

In this paper we provide instructions for the use of the 3D browser that we have developed to view of 3D models that we have generated with TDR-3Dbase the software environment for 3D reconstruction from plan parallel section images.

Introduction

For our models it is important that they can be viewed interactively. To that end we have developed software that provides similar interaction for the 3D models as the original desktop software that we use to produce the models (Verbeek et al., 2001).

In this short paper we will introduce you to the installation for the Windows Platform. We hope to extend this with instructions for MacOS and Linux. However, following the line of the instructions one can try to complete it.

The local computer should have a good graphics adaptor and sufficient memory; for the latter we assume at least 1 Gb of RAM. Our next assumption is that you are using this software on a high bandwidth internet connection. We do not recommend using it with a wireless connection. It might turn out to be unnecessary slow and this will not render the performance of the visualization that is required for a good interaction. Next, the software is tested but still under development. New features might be added and improvements might be suggested. Please do understand that the environment has a somewhat experimental character. Nevertheless, it will allow you to view and interact with our 3D models at great ease.

Material & Methods

For the correct application of the 3D browser applet you need at least a runtime version of Java installed. We recommend the latest version. Java Runtime Version: <http://www.java.com/en/download/>

The URL for download has excellent instructions for installation and complete packages with a windows installer are available. It is recommended that you use an installer so that the Java environment is installed at default locations. Instead of the runtime version one can install the developers version; if you are in intending to develop Java applets yourself this is not at all necessary.

The Java runtime version will allow browsing through the section images and the annotations. In order to see the 3D models the installation needs to be extended with Java 3D extension. The Java3D version can be found here: <https://java3d.dev.java.net/binary-builds.html>

For convenience we recommend that you download the installer version. To date (January 2010), for windows this is: [j3d-1_5_2-windows-i586.exe](#). The installer will put the Java 3D API in the correct folders of your system. After installation we recommend a reboot. On the given URL for Java 3D there are instructions provided for the installation of the major operating systems. These instructions speak for themselves and should be followed.

Now that we have installed the Java software that is required to use the 3D browser for perusal of the 3D models some minor adjustments need be made to the Java environment. We need to make sure that sufficient memory is available for Java. To that end we need to adjust the runtime parameters for Java Runtime version.

If you have any problems with the installation do contact your system administrator. He/She will understand these instructions and help you to find possible flaws or mishaps in your local installation.

Let us assume that you have a Windows Vista environment, then please take the following steps.

1) Open the control panel:

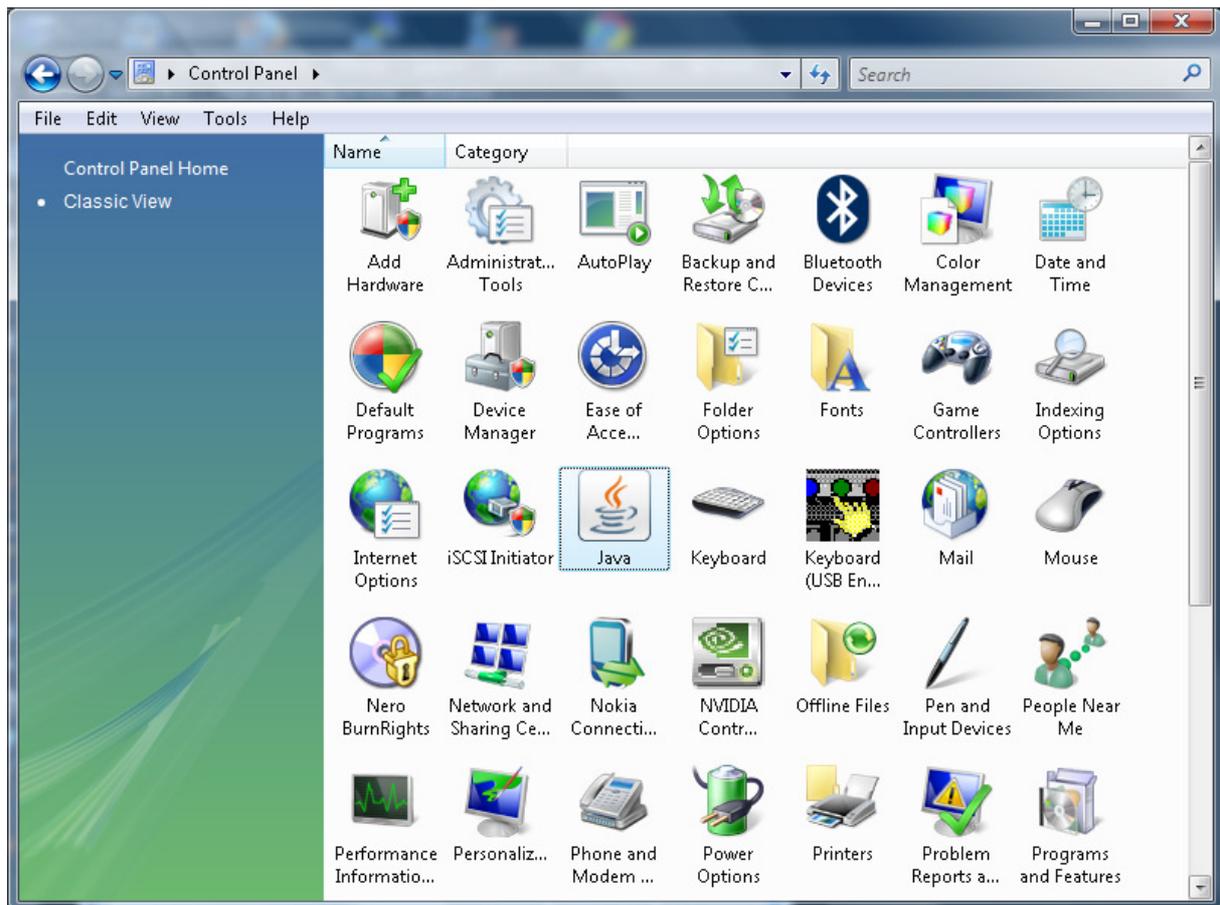


Figure 1 The windows Vista control panel in "classic view".

2) The Java Icon indicates that Java is indeed installed. Now, in order to change the runtime parameters select the Java Icon so that we can see the parameters that Java is using. An example is shown in Figure 2.

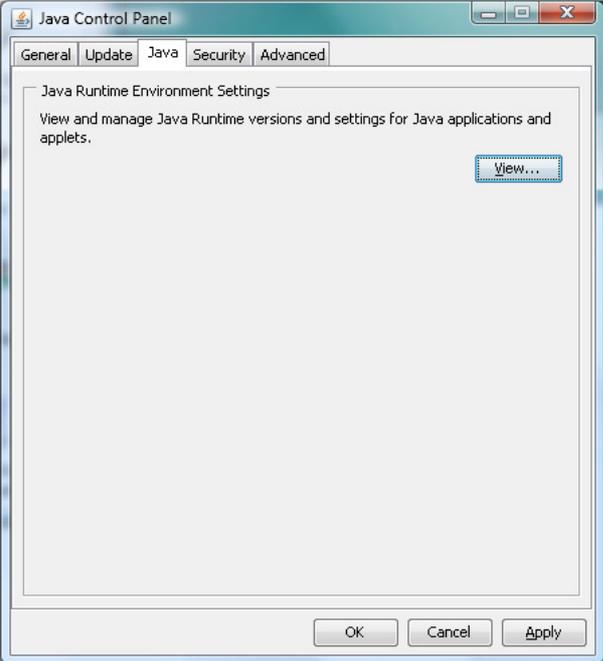


Figure 2 The Java Control Panel.

3) Figure 2 displays the Java Control Panel. Now select the Java Tab. This tab gives access to the user defined runtime parameters. In order to see the parameters press the view button. This will open a window with the Java Runtime Environment Settings. An example is shown in Figure 3.

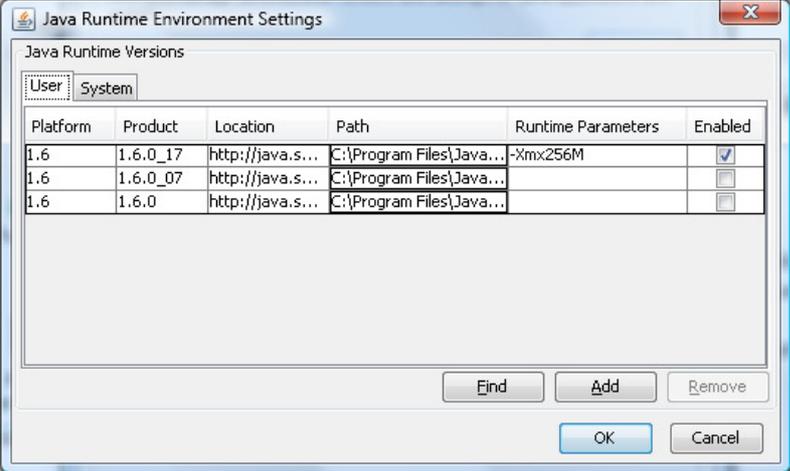


Figure 3 The Java Runtime Environment Settings.

3) From the user tab one can see that, on this particular system, previously updates of the JRE have been installed. The latest update, here 1.6.017, is enabled for use. The enabling is indicated with the “v” symbol. In that row in the cell “Runtime Parameters” you need to set the size of the memory that Java can use. In Figure 3 this is set as “-Xmx256M”; meaning that 256 Mb of the memory is allocated for Java. We suggest to start setting it to 256Mb (as the example indicates), you might want

to increase to 384Mb. The normal operation of your computer will not be affected by this setting. It will only be used for Java programs.

From this point, it might be good to reboot your computer. Go to the URL as indicated and use the software. All suggestions for improvement are welcome and can be sent to fverbeek@liacs.nl.

References

Verbeek, F.J., Rodrigues, D.D., Spaik H., Siebes A (2004) Data submission of 3D image sets to a bio-molecular database using active shape models and a 3D reference model for projection. In: Proceedings SPIE 5304, Internet Imaging V. 13-23.

Verbeek, F.J., Boon, P.J., Sloetjes, H., van der Velde, R., de Vos, N. (2002). Visualization of complex data sets over Internet: 2D and 3D visualization of the 3D digital atlas of zebrafish development. Proceedings SPIE 4672, Internet Imaging III. 20-29

Verbeek, F.J., den Broeder, M.J., Boon, P.J., Buitendijk, B., Doerry, E., van Raaij, E.J., and Zivkovic, D. (2000). A standard atlas of zebrafish embryonic development for projection of experimental data. Proceedings of SPIE 3964, 242-252.

Verbeek, F.J. (1999). Theory & Practice of 3D-reconstructions from serial sections. In Image Processing, A Practical Approach. R.A. Baldock and J. Graham, eds. (Oxford: Oxford University Press), pp. 153-195.

Last Update: January 2010