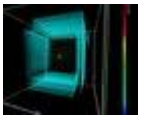
This document is available as a wiki at http://code.google.com/p/vx4d/wiki/Vx4D



vx4d

4D Visualization for Voxelized Tomography and Coverage Data

Vx4D
Vx4D 0.041 Documentation

Updated May 15, 2011 by william....@gmail.com

System Requirements

Graphics Card

Checking for OpenGL support

The graphics card in the machine running Vx4D must be support OpenGL. This can be tested by running the `glxinfo | OpenGL` command. You should see an output somewhat like this:

```
OpenGL vendor string: ATI Technologies Inc.
OpenGL renderer string: ATI Radeon HD 5700 Series
OpenGL version string: 4.1.10600 Compatibility Profile Context
OpenGL shading language version string: 4.10
OpenGL extensions:
```

If you don't have OpenGL Support

If you do not have OpenGL extensions currently, you want to make sure you have installed the factory graphics card driver. You can download them with the link below. Make sure you check the release notes to see if your graphics card is currently supported by checking Nvidia/ATI's release notes.

For ATI

http://support.amd.com/us/gpudownload/Pages/index.aspx

For Nvidia

http://www.nvidia.com/Download/index.aspx?lang=en-us

System Libraries and Dependent Packages

This document is available as a wiki at http://code.google.com/p/vx4d/wiki/Vx4D

- directfb
- stdc++
- libglu1-mesa-dev
- libglib2.0-dev
- libgl1-mesa-dev
- libx11-dev
- freeglut-dev

Getting the Code

Since we are not ready to release the source code publicly, please use the link sent around in the email for the link to the tar file:

http://uscms1.fltech-grid3.fit.edu/willbittner/vx4d-0.041.tar

Once you have downloaded it run

```
tar -xf vx4d-0.041.tar
```

If you have not received the email, ask another group member or you can email me: william.bittner@gmail.com

Compiling the Code

1. Go to the code directory, usually vx4d-0.041-unstable , and type make
2. make will compiles all the files and place the finished executable in ./bin/Release/vx4d.exe
3. Though the file is an exe file, IT IS NOT FOR WINDOWS
4. As of right now there is no ./configure script, so if anything is said to be “not defined” or “library not found” please make sure all the packages above are installed

Portability Notes

On some systems, -L/lib64 -lrt must be added/subtracted to the LDLIBS= line in the make file.

Loading a plot

This document is available as a wiki at http://code.google.com/p/vx4d/wiki/Vx4D

How to load voxelized data, and config file

```
./vx4d.exe dataFileName configFileName
```

Controlling a plot

Moving Camera (your view) along X,Y,Z axis

- W – moves along Y axis into the screen
- S – moves along Y axis back towards you
- A – moves along the X axis to the left
- D – moves along the X axis to the right

Rotating Volume around Center of Volume

- This is done by clicking the volume with the left mouse, holding it down, and moving the mouse around.

Rotating the Volume around an Axis

- R – rotates volume around X axis , direction pointing into the screen
- F – rotates volume around X axis, direction pointing at you

Increase / Decrease the minimum angle per voxel amount

- U – increases the min angle the voxel must have to be displayed, the actual value will be displayed in the terminal when the button is pressed
- J – decreases the min angle the voxel must have to be displayed

Controlling the minimum number of muons needed per voxel

- Y – increases the min number of muons the voxel must contain to be displayed. Again, the current value will be displayed in the terminal when the button is pressed
- H – lowers the min number of muons the voxel must contain to be displayed.

The Configuration File

Sample Config File

The config file listed below is what you should use as your base. Remember, the config file must always be specified after the data file. See above, "Loading a Plot"

```
[settings]
plotXlen=25
plotYlen=40
plotZlen=75
xAxisLabel=X axis label
yAxisLabel=Y axis label
zAxisLabel=Z axis label
xVoxelSize=9
yVoxelSize=3
zVoxelSize=3
xTickInterval=2
yTickInterval=4
zTickInterval=4
colorKeyMin=7
colorKeyMax=8
colorKeyLabel=Color Key Label Test
plotLabel=Test Plot 222
axisLabelSize=3
keyLabelSize=2
plotLabelSize=7
targetDataFile=blah.dat
targetOn=0
cinematicOn=0
```

What the settings in the config file do

- `[settings]` must always start the config file
- `plotXlen=` this is how many visual units the plot is in X
- `plotYlen=` this is how many visual units the plot is in Y
- `plotZlen=` this is how many visual units the plot is in Z
- `xAxisLabel=` The label written below the x axis
- `yAxisLabel=` Same (y)
- `zAxisLabel=` Same (z)
- `xVoxelSize=` The size you voxelized the data in the units you are using in X
- `yVoxelSize=` Same (y)
- `zVoxelSize=` Same (z)
- `xTickInterval=` each tick is how many units (i.e. mm's). Every 5 ticks is a major tick mark, and is labeled.
- `yTickInterval=` same (y)
- `zTickInterval=` same (z)
- `colorKeyMin=` this is the Minumum angle for the voxel to be displayed, and also will black out the color scale on the right up to this point to show no voxels below this color with be displayed. Note: Color is still calculated based on 0-colorKeyMax
- `colorKeyMax=` This is the maximum angle for a voxel (everything >= is red) and is the number displayed as the maximum angle on the color key. For example, coverage plots colorKeyMax=1 , therefore everything is from 0-1
- `colorKeyLabel=` The label explaining the color key. i.e. Mean Deflection Angle
- `plotLabel=` Label above the plot. Leave empty if none
- `axisLabelSize=` size parameter for the sizes of the labels of the Axis

- `keyLabelSize=` size of the color key label
- `plotLabelSize=` size of the plot key label
- `targetDataFile=` the location of the target data file for this simulation for creating mesh target frames (CURRENTLY NOT SUPPORTED)
- `targetOn=` for turning on a target (CURRENTLY NOT SUPPORTED)
- `cinematicOn=` for turning on and off cinematic mode. 0 is off (Scientific Mode) , and 1 is for on (Cinematic Spinning video mode)

Bugs and Bug Reporting

Please use the `Issues` tab on the top of this page to report any bugs or issues. Please do not email me. Google code's issue system is a good way to systematically handle requests for fixes.

Comment by LordOfTh...@gmail.com, May 24, 2011

Additional keyboard shortcuts: T: translates view up z axis G: translates view down z axis Z: rotates plot counterclockwise in z X: rotates plot clockwise in z 1 and 2: standard views