

Notes on Java, Eclipse, TortoiseSVN, Linux

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1 TortoiseSVN

1. Before trying to commit **BEAST** code, relocate to **https://** not **http://**
2. Google hides my password under Committers - graham853 - Settings, or some such.

2 Java and Eclipse

1. Maths library **commons-math-2.2.jar** (or similar) not found. Version keeps updating. Select **beast16**, go to Project - Properties - Java Build path - Add jars.
2. assertions are off by default, even in debug mode. Go to Project - Properties - Run/Debug settings.

Then select **BeastMain**. Click **Edit...**, go to **Arguments**. Then type **-enableassertions** in **VM arguments**.

Repeat for **AlloppNetworkModelTEST** and other tests in place of **BeastMain**

3. I get build errors relating to **launch4j** and **jarbundler**. I think these are for making executables on windows and Mac.
4. Window - Reset Perspective is the only way I know to restore sanity after an accidental drag or double click rearranges the windows.
5. Bookmarks. Right click in left of course and **Add Bookmark...** and fill in stuff. Then Window - show view - Other... and choose **Bookmarks**.
6. **CLASSPATH**. All this on one line:

```
java -classpath .;C:\AAA\Programming\Goteborg\workspace\beast16\bin;  
C:\AAA\Programming\Goteborg\workspace\beast16\lib\*  
dr.app.beast.BeastMain -seed 42
```

(No space between first line and second, but space between second line and third.)

3 Netbook with Ubuntu Linux

Installed Ubuntu 10.10.

1. Need to go to System - Preferences - Mouse and turn off touchpad clicks to make touchpad useable in menus.
2. `$PWD` = current working directory. `cd` to directory containing `foo`, then `$PWD/foo` to run it.
3. `gcc` needs `-lm` flag for maths library. (Why?)

3.1 R under Ubuntu

Installed R. Installed a plugin for `gedit`.

`gedit - Edit - Preferences - Plugins - R integration.`

3.2 Eclipse under Ubuntu

Downloaded and installed Eclipse. It needs extracting. Double-click it and it says it needs Java.

I got OpenJDK via Ubuntu Software centre. Now Eclipse doesn't start at all.... several minutes later it pops up 'terminated' message: 'JVM terminated Exit code B Dosgi.requiredJavaVersion=1.5 ...'.

Google error, it seems my JVM and Eclipse are incompatible. I got rid of OpenJDK, and followed instructions from Oracle, downloading `jdk-6u...i585.bin`. I `sudo` ran it from terminal, in directory `/etc`. It seems to be OK in `/etc/jdk-1.6.0_27`. Eclipse still doesn't work.

Found instructions at [https://help.ubuntu.com/community/Ubuntu_documentation>Community_documentation>EclipseIDE](https://help.ubuntu.com/community/Ubuntu_documentation%3ECommunity_documentation%3EEclipseIDE). It says to add the SUN JVM to file `/etc/eclipse/java_home` which doesn't exist.

Then tried Eclipse Project Release Notes, adding

```
-vm
/etc/jdk-1.6.0_27/bin/java
```

to `eclipse.ini`. Eclipse works.

3.3 BEAST in Eclipse under Ubuntu

Installed subversion.

Got `svn` command from <http://code.google.com/p/beast-mcmc/source/checkout>.

`cd` to `/home/Programming/workspace` and use

```
svn checkout http://beast-mcmc.googlecode.com/svn/trunk/ beast16
```

Run Eclipse.

File - New Java Project Untick 'Use default location', browse to
/home/graham/Programming/workspace/beast16.

click Next, wait

under Libraries, remove libjri.jnilib

click Finish, wait.

Run, choose Java application. Wait for it to find 'main' classes. Choose BeastMain. Seems to work.

3.4 AlloppSim on Netbook, Ubuntu

```
graham@ubuntu:~$ cd simulation_di_tets_multigene/  
graham@ubuntu:~/simulation_di_tets_multigene$ R --slave --vanilla --args  
  /home/graham/scenA < AlloppSim_main.r  
Error in setwd("C:/AAA/Programming/Goteborg/simulation_di_tets_multigene") :  
  cannot change working directory
```

Edited AlloppSim_main.r to deal with that.

```
graham@ubuntu:~/simulation_di_tets_multigene$ R --slave --vanilla --args  
  /home/graham/scenA < AlloppSim_main.r  
Error in library(ape) : there is no package called 'ape'
```

Install ape. Asks for personal library and CRAN mirror.

```
install.packages("ape")  
Installing package(s) into /usr/local/lib/R/site-library  
(as lib is unspecified)  
Warning in install.packages("ape") :  
  'lib = "/usr/local/lib/R/site-library"' is not writable  
Would you like to create a personal library  
'~/R/x86_64-pc-linux-gnu-library/2.13'  
to install packages into? (y/n) y  
--- Please select a CRAN mirror for use in this session ---  
Loading Tcl/Tk interface ... done  
also installing the dependency gee  
  
trying URL 'http://www.stats.bris.ac.uk/R/src/contrib/gee_4.13-17.tar.gz'  
Content type 'application/x-gzip' length 56471 bytes (55 Kb)  
opened URL  
=====  
downloaded 55 Kb  
.....  
.....  
  
* DONE (ape)  
  
The downloaded packages are in  
'/tmp/RtmpPXgt5G/downloaded_packages'
```

Quit R, try running AlloppSim again

```
graham@ubuntu:~/simulation_di_tets_multigene$ R --slave --vanilla --args
/home/graham/scenA < AlloppSim_main.r
AlloppSim running with directory /home/graham/scenA
gene tree
Nearly Newick
[1] "((01bA:0.0302458,01zB:0.0302458):0.043965,(01aA:0.02711082,01zA:0.02711082):0.043965)"
.....
```

```
sh: seqgen.exe: not found
```

.....

Don't know why seqgen.exe not found. Anyway, it won't work on Linux. Compile it.

```
graham@ubuntu:~/SeqGenSource$ gcc -Wall -pedantic -Wextra -Wno-unused-parameter -lm
aamodels.c eigen.c evolve.c gamma.c global.c model.c nucmodels.c progress.c seq-gen.c
treefile.c twister.c -o seqgen
```

Try running seqgen with no args:

```
graham@ubuntu:~/SeqGenSource$ $PWD/seqgen
No model has been specified (use the -m option)
```

.....

Copy seqgen to simulation_di_tets_multigene directory.

Try AlloppSim again. Add \$PWD/ to path to call seqgen. Try again. Appears to make a BEAST file, but dies trying to run BEAST.

Edited AlloppSim_main.r, java classpath, fifth try, BEAST is running from AlloppSim on NETBOOK.

4 Albiorix

4.1 File transfer

```
graham@ubuntu:~$ sftp gjones@pc158250.dpes.gu.se
password (wait...)
sftp> put /home/graham/x.txt x.txt
sftp> ls
sftp> bye
```

Another example, with failure to remove directory: Why?

```

sftp> ls
R                               SeqGenSource
beast16                         bio
mcmc.operators                 simulation_di_tets_multigene
x10.log                        x10.species.trees
x10.trees
sftp> rm x10.*
Removing /home/gjones/x10.log
Removing /home/gjones/x10.species.trees
Removing /home/gjones/x10.trees
sftp> rmdir simulation_di_tets_multigene/
Couldn't remove directory: Failure

Uploading AlloppSim, which is in simulation_di_tets_multigene.
sftp> cd simulation_di_tets_multigene/
sftp> ls
seqgen

sftp> put /home/graham/simulation_di_tets_multigene/* .
Uploading.....

sftp> ls
!RUNALLOPPSIM.BAT              AlloppSim_1readconfig.r
AlloppSim_1readconfig2.r      AlloppSim_2makemultree.r
AlloppSim_3makegtrees.r       AlloppSim_4makeseqfiles.r
AlloppSim_5beastxml_toplevel.r AlloppSim_6beastxml_bits.r
AlloppSim_main.r              displaytrees.r
mcmc.operators                 mcmc.operators.txt
more-complicatd-config.txt     randomseeds.r
seqgen                          seqgen.exe
sftp>

```

4.2 My BEAST on Albiorix

```

ssh gjones@pc158250.dpes.gu.se
password (wait...)

cd to directory (if needed), and do

svn checkout http://beast-mcmc.googlecode.com/svn/trunk/ beast16

Long listing of files ending
A   beast16/examples/incorrect/testOTFPCLikelihood.xml
U   beast16
Checked out revision 4366.

Look at them:

```

```

[gjones@pc158250 ~]$ ls
beast16 bio x.txt
[gjones@pc158250 ~]$ cd beast16/
[gjones@pc158250 beast16]$ ls
build_BEAST_Backup_2009_10_27.xml  build_vcs.xml  NOTIFY
build_coalsim.xml                 build.xml      plugins_SDK
build_eclipse.xml                 doc            release
build_pathogen.xml                examples      release_phylogeography
build_phylogeography.xml          lib            src
build_tracer.xml                  LICENSE
build_treestat.xml                native

Build BEAST:
[gjones@pc158250 beast16]$ ant
Buildfile: build.xml

clean:

init:
    [echo] BEAST: /home/gjones/beast16/build.xml

compile-all:
    [mkdir] Created dir: /home/gjones/beast16/build
    [javac] Compiling 1836 source files to /home/gjones/beast16/build
    [javac] Note: Some input files use or override a deprecated API.
    [javac] Note: Recompile with -Xlint:deprecation for details.
    [javac] Note: Some input files use unchecked or unsafe operations.
    [javac] Note: Recompile with -Xlint:unchecked for details.
    [echo] Successfully compiled.

dist-all:
    [mkdir] Created dir: /home/gjones/beast16/build/dist
    [jar] Building jar: /home/gjones/beast16/build/dist/beast.jar
    [jar] Building jar: /home/gjones/beast16/build/dist/beauti.jar

build:

BUILD SUCCESSFUL
Total time: 37 seconds
[gjones@pc158250 beast16]$

Try to run BEAST. Note BeastMain is in build on cluster, not bin, as on netbook.
java -classpath './:/home/gjones/beast16/build:/home/gjones/beast16/lib/*'
    dr/app/beast/BeastMain

BEAST starts, but:
Exception in thread "main" java.awt.HeadlessException:
No X11 DISPLAY variable was set, but this program performed an operation which requires it.

```

Run with file so no need for dialog.

```
java -classpath './home/gjones/beast16/build:/home/gjones/beast16/lib/*'  
dr/app/beast/BeastMain beast16/examples/release/starBEAST/YuleSingleLocus.xml
```

Gets a bit further but:

```
WARNING: Error running file: YuleSingleLocus.xml  
Fatal exception: null  
java.lang.NullPointerException  
at java.util.Properties$LineReader.readLine(Properties.java:418)  
at java.util.Properties.load0(Properties.java:337)  
at java.util.Properties.load(Properties.java:325)  
at dr.app.beast.BeastParser.<init>(Unknown Source)  
at dr.app.beast.BeastMain.<init>(Unknown Source)  
at dr.app.beast.BeastMain.main(Unknown Source)
```

Guess from source that it can't find file `beast.properties` which is in `beast16/src/dr/app/beast/` Where is it looking? On windows, "property" files are also in `beast16/bin/dr/app/beast/beast.properties`. Copied by hand:

```
cp beast16/src/dr/app/beast/beast.properties beast16/build/dr/app/beast/beast.properties  
cp beast16/src/dr/app/beast/beagle_parsers.properties beast16/build/dr/app/beast/beagle_parsers.  
cp beast16/src/dr/app/beast/development_parsers.properties beast16/build/dr/app/beast/developmen  
cp beast16/src/dr/app/beast/release_parsers.properties beast16/build/dr/app/beast/release_parse  
cp beast16/src/dr/app/beast/vector_parsers.properties beast16/build/dr/app/beast/vector_parsers.
```

Re-run BEAST, it is running.

```
java -classpath './home/gjones/beast16/build:/home/gjones/beast16/lib/*'  
dr/app/beast/BeastMain beast16/examples/release/starBEAST/YuleSingleLocus.xml
```

4.3 AlloppSim on Albiorix

Use `sftp` to transfer files: directories `simulation_di_tets_multigene`, `scenA`.

Trying:

```
cd simulation_di_tets_multigene/  
R --slave --vanilla --args CLUSTER /home/gjones/scenA < AlloppSim_main.r
```

Works!

.....
.....

Total trees read: 1001
Ignoring first 200 trees.
Total unique clades: 8

Finding maximum credibility tree...
Analyzing 801 trees...

0 25 50 75 100
|-----|-----|-----|-----|

Highest Log Clade Credibility: -0.27528574114238424
Collecting node information...

0 25 50 75 100
|-----|-----|-----|-----|

Annotating target tree...
Writing annotated tree...

A G = 1 N = 1 T = 4e-08 replicate 1 MUL-tree TRUE
((b0:0.01364240525,z0:0.01364240525):0.01064490984,(a0:0.01980898677,z1:0.01980898677):0.00447832
A G = 1 N = 1 T = 4e-08 1 / 1
[gjones@pc158250 simulation_di_tets_multigene]\$