

# 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]\$