

Building latest BCI2000 on OSX

Saturday, March 29, 2014 5:56 PM

To build in OSX, start by reading here:

http://www.bci2000.org/wiki/index.php/Programming_Howto:Quickstart_Guide
http://www.bci2000.org/wiki/index.php/Programming_Reference:Build_System

Xcode is not a good idea. Its compiler, language dialect, and STL do not seem compatible with BCI2000 since BCI2000 is developed in MSVisualStudio and targets its compiler/dialect/STL.

1. Install Macports
 - a. <https://www.macports.org/install.php>
2. Install Qt
 - a. 'sudo port install qt4-mac'
 - i. 5.2.1 online installer from <http://qt-project.org/downloads> only has clang binaries. Maybe that's ok?
3. Install gcc.
 - a. 'sudo port install gcc48'
 - i. Replace '48' with whichever version.
4. Install Cmake
 - a. <http://www.cmake.org/cmake/resources/software.html>
 - b. I used version 2.8.12
5. Install your IDE
 - a. I used Code::Blocks 13.12 <http://www.codeblocks.org/>
6. Download the BCI2000 source
 - a. 'svn checkout <http://www.bci2000.org/svn/trunk>'
 - b. I had revision 4704
7. Create a BCI2000/OSXBuild directory
8. Configure and generate using cmake
 - a. 'cmake-gui'
 - b. Set the build directory to the directory created above.
 - c. Set the source directory to BCI2000/build
 - d. (Optional) Check BUILD_ALL_BUILDUTILS
 - e. (Optional) Check BUILD_COMMANDLINE_FILTERS
 - f. Click on Configure
 - g. Set the project to use your IDE and compiler installed above.
 - i. It may fail because it cannot find Qt. In the GUI, set the QT_MAKE_EXECUTABLE to /opt/local/bin/qmake
 - ii. It may fail again. Set the path to MATLAB_EXECUTABLE (e.g. /Applications/MATLAB_R2011b.app/bin/matlab)
 - h. Configure
 - i. Generate
 - j. Close Cmake
9. Fix the problem importing the wrong semaphore.h
 - a. In /src/shared/utlis/Lib/Semaphore.h

```
#ifndef _WIN32
# include <windows.h>
#else
# include
</Applications/Xcode.app/Contents/Developer/Platforms/MacOSX.platform/Developer/SDKs/MacOSX10.9.sdk/usr/include/semaphore.h>
// # include <semaphore.h>
#endif // _WIN32
```
10. Other Semaphore problems? Skip this step unless you get errors specific to sem_init and sem_destroy.
 - a. In /src/shared/utlis/Lib/Semaphore.h

```
//sem_t mSemaphore;
sem_t* mSemaphore;
```
 - b. In /src/share/utlis/Lib/Semaphore.cpp

```
Semaphore::Semaphore(int inCount)
{
    //::sem_init( &mSemaphore, 0, inCount );
    mSemaphore= sem_open("/semaphore", O_CREAT, 0644, inCount);
}

Semaphore::~Semaphore()
{
    //::sem_destroy( &mSemaphore);
    sem_close(mSemaphore);
}

bool
Semaphore::Acquire() const
{
    int err = EINTR;
    while( err == EINTR )
        //err = ::sem_wait( const_cast<sem_t*>( &mSemaphore) ) ? errno : 0;
        err = sem_wait( mSemaphore ) ? errno : 0;
    return 0 == err;
}

bool
Semaphore::Release() const
{
    //return 0 == ::sem_post( const_cast<sem_t*>( &mSemaphore) );
    return 0 == sem_post( mSemaphore );
}
```
11. Give alternate thread yield
 - a. In /src/shared/utlis/Lib/ThreadUtils.cpp
 - i. void Yield_()

```
{
    #if __APPLE__
        int sched_yield(void);
    #else
        ::pthread_yield();
    #endif
}
```
12. MAXPATH is out of scope
 - a. There is probably a better fix, but I edited src/shared/utlis/Lib/FileUtils.cpp near line 293

```
//char buffer[PATH_MAX+1] = "";
char buffer[1025] = "";
```
13. Build/buildutlis/cpp_demangle.cpp

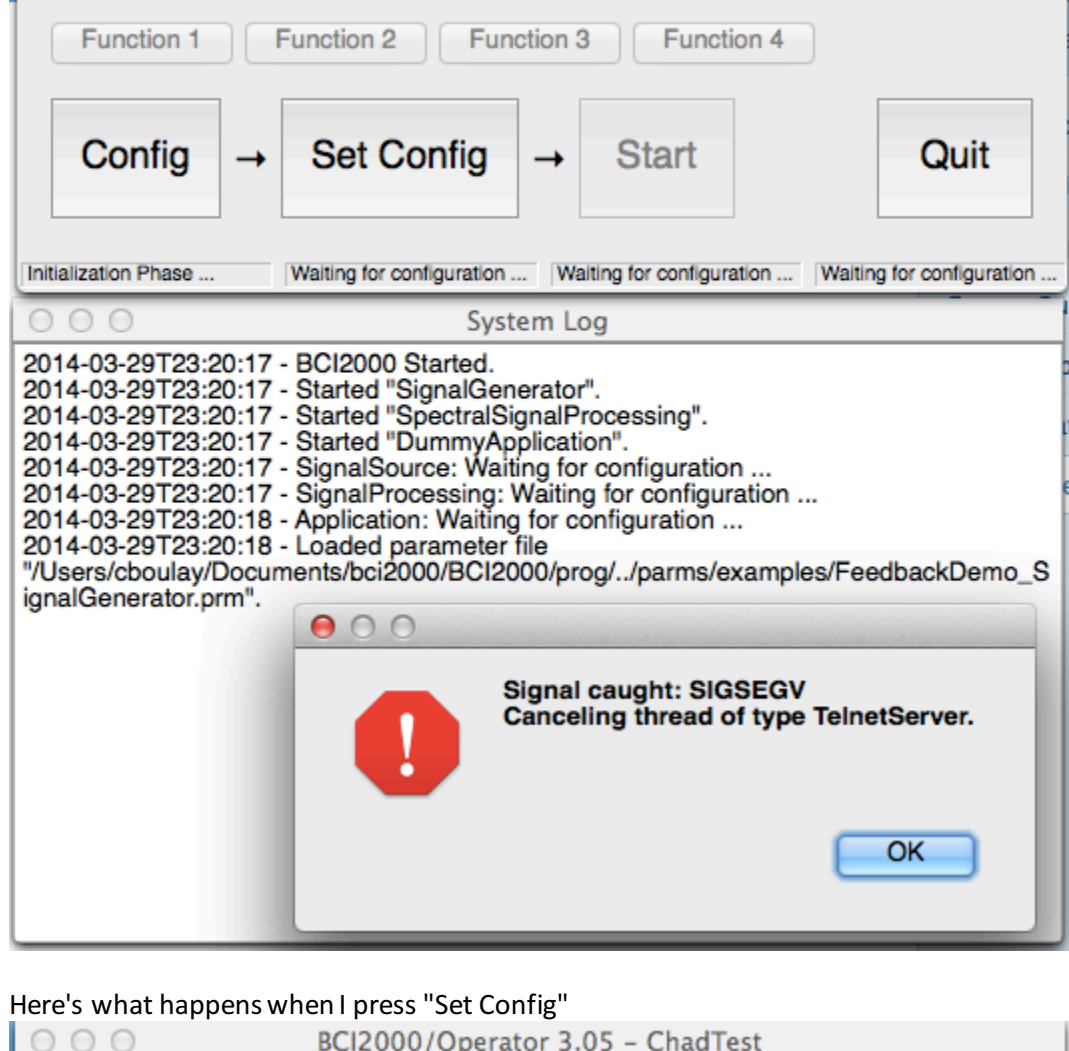
```
#if !defined(__APPLE__)
#include <malloc.h>
#endif
```

Wrap ::free(p) with something similar at the bottom.

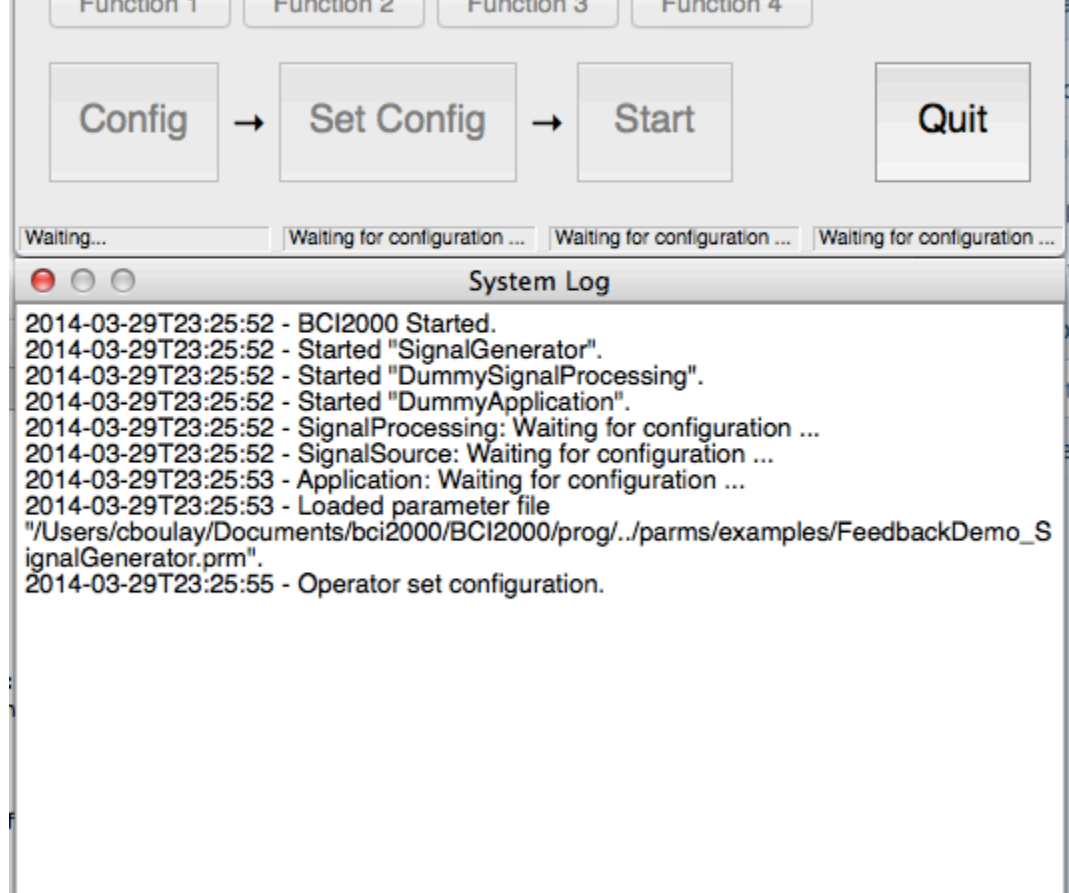
Everything should now compile, but it won't run.

Using a batch file with SignalGenerator, DummySignalProcessing, and DummyApplication.

Here's what happens when I press "Config"

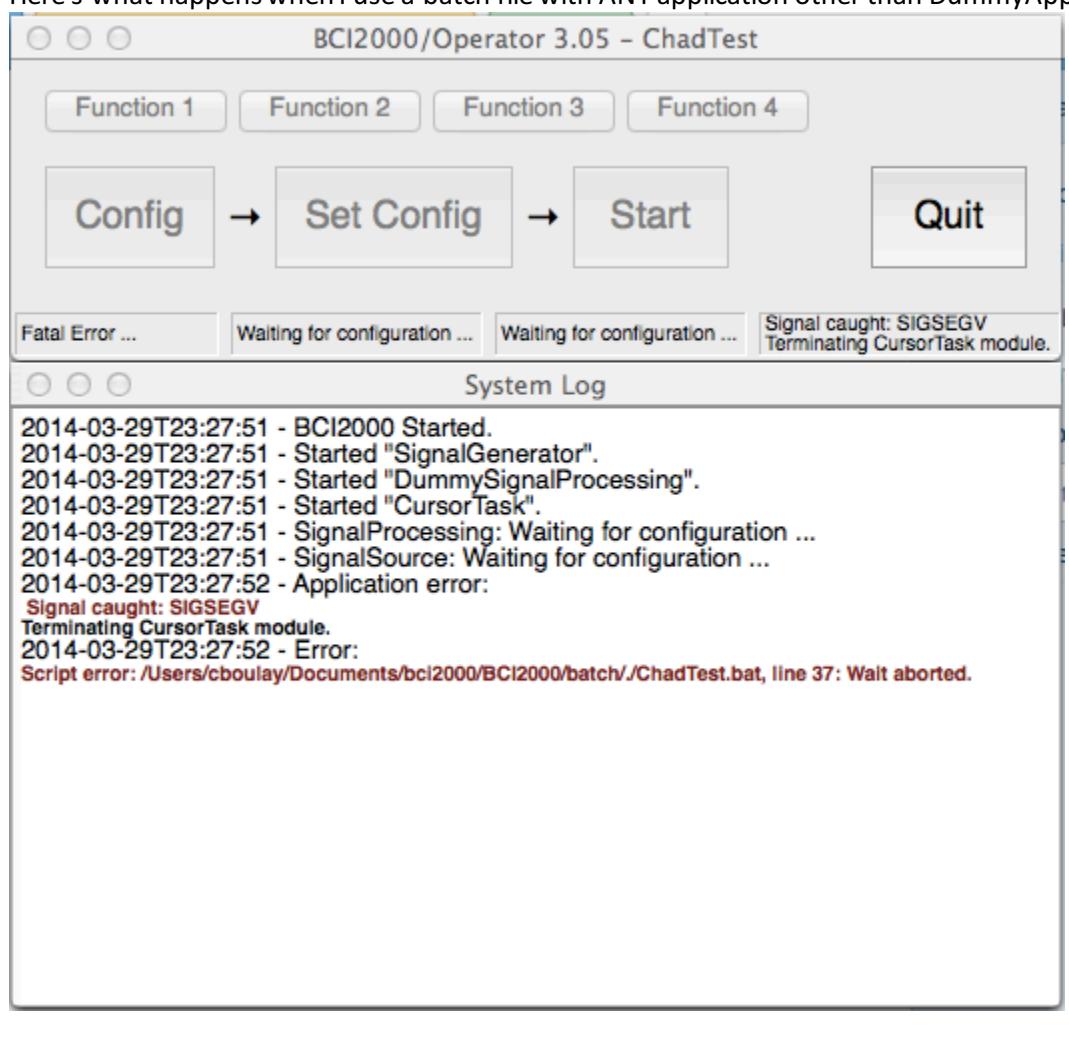


Here's what happens when I press "Set Config"



It just sits there. Quit is clickable.

Here's what happens when I use a batch file with ANY application other than DummyApplication.



```
>> s = bci2000chain(fn, 'TransmissionFilter|SpatialFilter|ARFilter', 'ExampleParameters.prm', 'SpatialFilterType', 3)
bci_dat2stream -p/private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/in.prm
< "/Users/cboulay/Documents/bci2000/BCI2000/data/samplefiles/eeg3_2.dat" | TransmissionFilter | SpatialFilter |
ARFilter | bci_stream2mat > /private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/out.mat: Segmentation fault
bci_dat2stream --version: Segmentation fault
bci_stream2mat --version: Segmentation fault
The following commands should be executed to clean up the temporary files:
delete('/private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/in.prm')
delete('/private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/out.mat')
mkdir('/private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664')
Error using bci2000chain (line 403)
system call failed:
bci_dat2stream -p/private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/in.prm <
"/Users/cboulay/Documents/bci2000/BCI2000/data/samplefiles/eeg3_2.dat" | TransmissionFilter | SpatialFilter |
ARFilter |
bci_stream2mat > /private/tmp/tp77666d6b_2494_4424_a185_ca36fd8cb664/out.mat
Logic Error: Exception caught as displayed previously
AbortingTransmissionFilter.
Logic Error: Exception caught as displayed previously
AbortingSpatialFilter.
Logic Error: Exception caught as displayed previously
AbortingARFilter.
Runtime Error: Exception caught as displayed previously
Abortingbci_stream2mat.
/bin/bash: line 1: 24204 Segmentation fault: 11 bci_dat2stream -p/private/tmp/tp77666d6b_2494_4424_a185
_ca36fd8cb664/in.prm <
"/Users/cboulay/Documents/bci2000/BCI2000/data/samplefiles/eeg3_2.dat"
[4 more lines omitted]
```