

Basically the purpose of this app is to accept the NeuroSky descriptions of what sorts of brain activity trigger different frequency responses as hypothetical, and make a tool that can prove or disprove NeuroSky's theories.

For the rails app, run data capture in background, and show data retrieval off of user requests. Data retrieval segments for averaging values could be sized according to the time interval between user requests. The sensor produces samples once per second in a continuous stream once the sensor is paired with the computer and the background reader is started.

Evaluate the various frequency triggering mental states per the NeuroSky Brainwave Visualizer application, and formulate some activities with brief instruction sets that could be shown to users on a rails page.

Have a persistent display of average frequency levels that refreshes with each round trip to the controller as the user conducts triggering activities.

Sample raw datastream:

```
(master) Brooks Imperial
Brookss-MBP:mindwave $ ruby mindwavetest.rb
I, [2016-03-29T10:56:04.954874 #1308] INFO -- : Registering connection 'neurosky'...
I, [2016-03-29T10:56:04.954952 #1308] INFO -- : Registering device 'neurosky'...
I, [2016-03-29T10:56:04.954979 #1308] INFO -- : Preparing work...
I, [2016-03-29T10:56:04.955569 #1308] INFO -- : Initializing artoo::connection neurosky...
I, [2016-03-29T10:56:04.958703 #1308] INFO -- : Initializing artoo::device neurosky...
I, [2016-03-29T10:56:04.961847 #1308] INFO -- : Starting work...
I, [2016-03-29T10:56:04.962111 #1308] INFO -- : Connecting to 'neurosky' on port '/dev/cu.MindWaveMobile-DevA'...
I, [2016-03-29T10:56:06.295793 #1308] INFO -- : Starting driver 'Artoo::Drivers::Neurosky'...
Scanning...
{:delta=>0, :theta=>0, :lo_alpha=>0, :hi_alpha=>0, :lo_beta=>0, :hi_beta=>0, :lo_gamma=>0, :mid_gamma=>0}
{:delta=>0, :theta=>0, :lo_alpha=>0, :hi_alpha=>0, :lo_beta=>0, :hi_beta=>0, :lo_gamma=>0, :mid_gamma=>0}
{:delta=>10266127, :theta=>9550604, :lo_alpha=>13402881, :hi_alpha=>5918976, :lo_beta=>8087808, :hi_beta=>9734144, :lo_gamma=>13652736, :mid_gamma=>11156224}
{:delta=>13609730, :theta=>8850433, :lo_alpha=>404736, :hi_alpha=>13901824, :lo_beta=>9004032, :hi_beta=>10762752, :lo_gamma=>16255744, :mid_gamma=>527360}
{:delta=>16293376, :theta=>15246336, :lo_alpha=>13555969, :hi_alpha=>1733888, :lo_beta=>14692608, :hi_beta=>15222016, :lo_gamma=>10630144, :mid_gamma=>12063232}
{:delta=>9436162, :theta=>15381248, :lo_alpha=>1406721, :hi_alpha=>8996352, :lo_beta=>12857344, :hi_beta=>284160, :lo_gamma=>9906944, :mid_gamma=>5706752}
{:delta=>6930176, :theta=>3591936, :lo_alpha=>1057026, :hi_alpha=>11736065, :lo_beta=>2981376, :hi_beta=>5715200, :lo_gamma=>11343872, :mid_gamma=>15536896}
{:delta=>8262401, :theta=>4221440, :lo_alpha=>11411712, :hi_alpha=>7542784, :lo_beta=>3738880, :hi_beta=>8526080, :lo_gamma=>10291968, :mid_gamma=>16253696}
{:delta=>13723392, :theta=>16336640, :lo_alpha=>8780288, :hi_alpha=>6641920, :lo_beta=>9786368, :hi_beta=>13452032, :lo_gamma=>68608, :mid_gamma=>4787712}
{:delta=>5741312, :theta=>14514689, :lo_alpha=>13382913, :hi_alpha=>4396288, :lo_beta=>14832128, :hi_beta=>10566656, :lo_gamma=>8064000, :mid_gamma=>15469568}
{:delta=>7093795, :theta=>5364480, :lo_alpha=>5933056, :hi_alpha=>8346112, :lo_beta=>9982464, :hi_beta=>936448, :lo_gamma=>16260352, :mid_gamma=>4205568}
{:delta=>8994304, :theta=>14949120, :lo_alpha=>7480577, :hi_alpha=>2630144, :lo_beta=>1445120, :hi_beta=>4283392, :lo_gamma=>8980992, :mid_gamma=>5441024}
{:delta=>6108160, :theta=>16216320, :lo_alpha=>11194881, :hi_alpha=>8292096, :lo_beta=>14101760, :hi_beta=>7021824, :lo_gamma=>15342336, :mid_gamma=>1837824}
{:delta=>7720704, :theta=>2301440, :lo_alpha=>9177857, :hi_alpha=>3164928, :lo_beta=>606208, :hi_beta=>11904256, :lo_gamma=>15472384, :mid_gamma=>4137984}
{:delta=>4745472, :theta=>3557632, :lo_alpha=>15387136, :hi_alpha=>15947776, :lo_beta=>15908608, :hi_beta=>13971200, :lo_gamma=>8394752, :mid_gamma=>10162176}
{:delta=>5512451, :theta=>10101504, :lo_alpha=>6494976, :hi_alpha=>3018752, :lo_beta=>16322816, :hi_beta=>200704, :lo_gamma=>5377792, :mid_gamma=>11997952}
{:delta=>7111937, :theta=>9903105, :lo_alpha=>16590336, :hi_alpha=>2515712, :lo_beta=>4945920, :hi_beta=>7026432, :lo_gamma=>1315840, :mid_gamma=>15475712}
```

NeuroSky Ruby on Rails App Notes

Brooks Imperial

```
{:delta=>5084416, :theta=>7956737, :lo_alpha=>1539584, :hi_alpha=>13788416, :lo_beta=>13797120, :hi_beta=>12197376, :lo_gamma=>6400, :mid_gamma=>12392192}
{:delta=>10917377, :theta=>16346369, :lo_alpha=>6633216, :hi_alpha=>7560192, :lo_beta=>2831360, :hi_beta=>4798208, :lo_gamma=>11274496, :mid_gamma=>2427648}
{:delta=>15513351, :theta=>13027329, :lo_alpha=>6625024, :hi_alpha=>6472960, :lo_beta=>8411648, :hi_beta=>11739392, :lo_gamma=>10224896, :mid_gamma=>5047040}
{:delta=>14616842, :theta=>2708736, :lo_alpha=>6633728, :hi_alpha=>1904896, :lo_beta=>1536, :hi_beta=>9111040, :lo_gamma=>5833472, :mid_gamma=>15007744}
{:delta=>8665601, :theta=>7422976, :lo_alpha=>926976, :hi_alpha=>725760, :lo_beta=>3087104, :hi_beta=>14685696, :lo_gamma=>9701632, :mid_gamma=>2034432}
{:delta=>4488707, :theta=>14435072, :lo_alpha=>8332544, :hi_alpha=>6033408, :lo_beta=>7081984, :hi_beta=>15666176, :lo_gamma=>12780288, :mid_gamma=>3539968}
{:delta=>10998018, :theta=>371969, :lo_alpha=>8290560, :hi_alpha=>7434496, :lo_beta=>9262592, :hi_beta=>15945984, :lo_gamma=>7278080, :mid_gamma=>5244672}
{:delta=>7098880, :theta=>8859648, :lo_alpha=>13900288, :hi_alpha=>14488064, :lo_beta=>9248512, :hi_beta=>3410432, :lo_gamma=>12518144, :mid_gamma=>3344384}
{:delta=>10372096, :theta=>10232320, :lo_alpha=>12455680, :hi_alpha=>1966848, :lo_beta=>2490880, :hi_beta=>7799040, :lo_gamma=>7274496, :mid_gamma=>12255488}
^CI, [2016-03-29T10:59:33.896848 #1308] INFO -- : Shutting down...
E, [2016-03-29T10:59:33.897894 #1308] ERROR -- : Actor crashed!
Celluloid::DeadActorError: attempted to call a dead actor
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/proxies/sync_proxy.rb:23:in `method_missing'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/artoo-1.8.2/lib/artoo/device.rb:51:in `event_topic_name'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/calls.rb:26:in `public_send'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/calls.rb:26:in `dispatch'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/calls.rb:63:in `dispatch'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/cell.rb:60:in `block in invoke'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/cell.rb:71:in `block in task'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/actor.rb:357:in `block in task'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/tasks.rb:57:in `block in initialize'
  /Users/bi/.rvm/gems/ruby-2.2.4@davinci_coders/gems/celluloid-0.16.0/lib/celluloid/tasks/task_fiber.rb:15:in `block in create'
E, [2016-03-29T10:59:33.898130 #1308] ERROR -- : Actor crashed!
D, [2016-03-29T10:59:33.898328 #1308] DEBUG -- : Terminating 9 actors...
```

Ruby sensor reader:

```
#!/usr/bin/env ruby
```

```
require 'artoo'
```

```
connection :neurosky, :adaptor => :neurosky, :port => '/dev/cu.MindWaveMobile-DevA'
device :neurosky, :driver => :neurosky, :interval => 0.1
```

```
def handle_eeg(sender, data)
  # load database records here
  puts data
end
```

```
work do
  puts "Scanning..."
  on neurosky, :eeg => :handle_eeg
end
```