Manually starting the Controller and Alignerd applications

1. While the WormBot software has been observed to run problem free for months at a time occasionally things happen and the robot software may crash; either the aligner daemon (alignerd) or the WormBot controller itself. Symptoms that may indicate a crash are that the robot is no longer moving and collecting frames, indicating that controller has crashed or if aligned frames are no longer appearing indicating an alignerd crash.

2. To see if the software is running open a terminal window and type the command top (press the q key to exit top)

```
jpitt@jpitt-PowerEdge-T30:/wormbot$ top

top - 11:30:40 up 14 days, 18:48,  1 user,  load average: 3.53, 2.96, 2.55
Tasks: 238 total,   1 running, 180 sleeping,   0 stopped,   1 zombie
%Cpu(s): 19.7 us,  2.9 sy,  0.0 ni, 76.4 id,  0.6 wa,  0.0 hi,  0.4 si,  0.0 st
KiB Mem :  8031848 total,   277532 free,  2430832 used,  5323484 buff/cache
KiB Swap:  8250364 total,  5660048 free,  2590316 used.  4774232 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
10787 root      20   0  553412  65316  28420 S  71.3  0.8  17172:45 controller
  986 root      20   0  570572 106320  80092 S   6.7  1.3 933:17.91 Xorg
 2595 jpitt     20   0 1504892  68884  30684 S   6.3  0.9 693:38.44 compiz
 3724 jpitt     20   0  685048  22872  14024 S   2.7  0.3 111:54.69 gnome-term+
 9134 jpitt     20   0 3942824  69640  68880 S   1.0  0.9 284:43.06 blender
 2331 jpitt     20   0  409296  34736   3520 S   0.7  0.4  23:08.91 ibus-daemon
 2549 jpitt     20   0  656456  13064  10936 S   0.7  0.2 203:05.12 pulseaudio
23366 jpitt     20   0 2118088 285508 123284 S   0.7  3.6   1:11.68 Web Content
23471 jpitt     20   0 2181852 358364 107996 S   0.7  4.5   1:22.79 Web Content
    8 root      20   0       0      0      0 I   0.3  0.0  14:41.83 rcu_sched
   16 root      20   0       0      0      0 S   0.3  0.0   0:26.17 ksoftirqd/1
  190 root      -2   0       0      0      0 S   0.3  0.0  11:24.68 i915/signa+
21765 root      20   0       0      0      0 I   0.3  0.0   0:08.29 kworker/u8+
22042 jpitt     20   0 2452572 352416 109952 S   0.3  4.4   6:34.37 Web Content
23653 root      20   0       0      0      0 I   0.3  0.0   0:08.31 kworker/u8+
    1 root      20   0  185404   4208   2792 S   0.0  0.1   0:08.52 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.84 kthreadd
jpitt@jpitt-PowerEdge-T30:/wormbot$
```

3. In the above example you can see that the top processes list does not contain the alignerd but does contain controller.

4. To restart the software you can either reboot the machine, and the controller and alignerd applications will restart automatically after the computer reboots or you can open a terminal and enter the following commands to restart either the alignerd or controller

For alignerd:

sudo /wormbot/alignerd /wormbot/

For controller:

sudo /wormbot/controller

```
jpitt@jpitt-PowerEdge-T30:/wormbot$ sudo /wormbot/alignerd /wormbot/
argc=2
jpitt@jpitt-PowerEdge-T30:/wormbot$ top
```

5. You can then run top again to verify that the processes are running

```
top - 11:45:07 up 14 days, 19:03,  1 user,  load average: 3.30, 2.74, 2.60
Tasks: 239 total,   3 running, 179 sleeping,   0 stopped,   1 zombie
%Cpu(s): 34.2 us,  2.0 sy,  0.8 ni, 61.4 id,  0.7 wa,  0.0 hi,  0.8 si,  0.0 st
KiB Mem :  8031848 total,   136336 free,  2734508 used,  5161004 buff/cache
KiB Swap:  8250364 total,  5674640 free,  2575724 used.  4473008 avail Mem

  PID USER      PR  NI    VIRT    RES    SHR S  %CPU %MEM     TIME+ COMMAND
  499 root      20   0  559552 155160  10836 R 146.7  1.9   0:16.72 alignerd
10787 root      20   0  553428  64032  28420 R 133.3  0.8  17185:37 controller
    1 root      20   0  185404   4208   2792 S   0.0  0.1   0:08.53 systemd
    2 root      20   0       0      0      0 S   0.0  0.0   0:00.85 kthreadd
    4 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 kworker/0:+
    6 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 mm_percpu_+
    7 root      20   0       0      0      0 S   0.0  0.0   0:23.37 ksoftirqd/0
    8 root      20   0       0      0      0 I   0.0  0.0  14:42.63 rcu_sched
    9 root      20   0       0      0      0 I   0.0  0.0   0:00.00 rcu_bh
   10 root      rt   0       0      0      0 S   0.0  0.0   0:00.49 migration/0
   11 root      rt   0       0      0      0 S   0.0  0.0   0:01.90 watchdog/0
   12 root      20   0       0      0      0 S   0.0  0.0   0:00.00 cpuhp/0
   13 root      20   0       0      0      0 S   0.0  0.0   0:00.00 cpuhp/1
   14 root      rt   0       0      0      0 S   0.0  0.0   0:01.94 watchdog/1
   15 root      rt   0       0      0      0 S   0.0  0.0   0:00.45 migration/1
   16 root      20   0       0      0      0 S   0.0  0.0   0:26.19 ksoftirqd/1
   18 root       0 -20       0      0      0 I   0.0  0.0   0:00.00 kworker/1:+
   19 root      20   0       0      0      0 S   0.0  0.0   0:00.00 cpuhp/2
   20 root      rt   0       0      0      0 S   0.0  0.0   0:01.89 watchdog/2
   21 root      rt   0       0      0      0 S   0.0  0.0   0:00.49 migration/2
   22 root      20   0       0      0      0 S   0.0  0.0   0:23.06 ksoftirqd/2
```