

02/18/16

Baxter Golf

http://sdk.rethinkrobotics.com/wiki/Worked_Example_Visual_Servoing

<http://jessicamullins.com/pdf/mullins-boyce.pdf>

Worked Example Visual Servoing

LOGON CENG6838_TLH Pass: student6838_TLH

```
CENG6838_TLH@D125-43873:~$ whoami
CENG6838_TLH
CENG6838_TLH@D125-43873:~$ hostname
D125-43873
CENG6838_TLH@D125-43873:~$
```

```
1. CENG6838_TLH@D125-43873:~$ ls
ball_img                Golf
ball_img_new            list of Baxter_core_msgs.odt
baxter                  Music
Boyce_Mullins_BAXTER_Bucket_Sort_Project.py myflow.gv
catkin_ws              out.gv
Desktop                 out.png
Documents               Pictures
Downloads               Public
Erro-26.odt             ros1_old
examples.desktop        Templates
flow1.png               Videos
flow.jpeg
```

2. CENG6838_TLH@D125-43873:~\$ **cd catkin_ws (GO TO WORKSPACE)**

```
CENG6838_TLH@D125-43873:~/catkin_ws$ ls (LIST FILES IN CATKIN_WS)
baxter_msgs                golf2.py
baxter.sh                  golf2.py~
baxter.sh~                 golf2.pyc
Boyce_Mullins_BAXTER_Bucket_Sort_Project_ORIGINAL.py golf_setup1.py
Boyce_Mullins_BAXTER_Bucket_Sort_Project.py          golf_setup1.py~
Boyce_Mullins_BAXTER_Bucket_Sort_Project.py~        home_arms.py
Boyce_ORIGINAL1.py         home_arms.py~
Boyce__ORIGINAL (copy).py~ images
```

Boyce_ORIGINAL.py	new_capstone.py
Boyce_ORIGINAL.py~	new_capstone.py~
boys_golf.py	new_colballs.py
boys_golf.py~	new_colballs.py~
build	new_colballs_setup
capstone.py	new_colballs_setup~
capstone.py~	@.py
code2flow-master	run_baxter
colballs.py	src
devel	talker.py

3. CENG6838_TLH@D125-43873:~/catkin_ws\$./baxter.sh (LINK WITH BAXTER)

4. [baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws\$. run_baxter untuck

Today is Thu Feb 18 13:13:44 CST 2016

[INFO] [WallTime: 1455822824.782545] Untucking arms

[INFO] [WallTime: 1455822825.047815] Moving head to neutral position

[INFO] [WallTime: 1455822825.048031] Untucking: One or more arms Tucked; Disabling Collision Avoidance and untucking.

[INFO] [WallTime: 1455822835.778108] Finished tuck

[baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws\$ ls -la

```

drwxr-xr-x 35 CENG6838_TLH CENG6838_TLH 4096 Feb 18 13:14 ..
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 0 Oct 1 11:56 .bashrc
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 6705941 Oct 7 14:12 baxter_msgs

-rwxr-xr-x 1 CENG6838_TLH CENG6838_TLH 6180 Oct 1 12:17 baxter.sh

-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 35741 Nov 17 14:17
Boyce_Mullins_BAXTER_Bucket_Sort_Project_ORIGINAL.py
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 41142 Nov 21 14:14
Boyce_Mullins_BAXTER_Bucket_Sort_Project.py
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 41143 Nov 21 13:38
Boyce_Mullins_BAXTER_Bucket_Sort_Project.py~
.
.
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 41230 Nov 25 17:03 capstone.py
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 41277 Nov 24 20:19 capstone.py~
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 98 Oct 1 11:50 .catkin_workspace
drwxrwxr-x 4 CENG6838_TLH CENG6838_TLH 4096 Oct 30 2014 code2flow-master
-rwxrwxr-x 1 CENG6838_TLH CENG6838_TLH 35422 Oct 7 14:04 colballs.py
drwxrwxr-x 3 CENG6838_TLH CENG6838_TLH 4096 Oct 1 11:50 devel

-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 37886 Nov 24 15:14 golf2.py
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 37886 Nov 24 15:14 golf2.py~
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 22282 Nov 22 15:55 golf2.pyc

-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 5088 Nov 16 13:22 golf_setup1.py
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 5063 Nov 16 12:50 golf_setup1.py~

```

-rw-r--r-- 1 CENG6838_TLH CENG6838_TLH 897 Nov 16 12:26 home_arms.py
-rw-r--r-- 1 CENG6838_TLH CENG6838_TLH 897 Nov 16 12:24 home_arms.py~
drwxrwxr-x 2 CENG6838_TLH CENG6838_TLH 4096 Oct 14 12:12 images
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 39829 Nov 21 19:29 new_capstone.py
-rwxrwxrwx 1 CENG6838_TLH CENG6838_TLH 39825 Nov 21 19:12 new_capstone.py~
-rwxrwxr-x 1 CENG6838_TLH CENG6838_TLH 1722 Oct 14 13:16 new_colballs.py
-rwxrwxr-x 1 CENG6838_TLH CENG6838_TLH 1723 Oct 14 12:53 new_colballs.py~
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 5109 Oct 8 14:53 new_colballs_setup
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 5098 Oct 8 14:50 new_colballs_setup~
-rw-rw-r-- 1 CENG6838_TLH CENG6838_TLH 35501 Nov 24 13:05 @.py

-rwxr-xr-x 1 CENG6838_TLH CENG6838_TLH 9376 Oct 1 12:06 run_baxter

drwxrwxr-x 4 CENG6838_TLH CENG6838_TLH 4096 Oct 7 13:41 src
-rwxrwxr-x 1 CENG6838_TLH CENG6838_TLH 2218 Nov 22 13:42 talker.py

```
CENG6838_TLH@D125-43873:~/catkin_ws$ ls | grep golf
```

```
boys_golf.py
boys_golf.py~
golf2.py
golf2.py~
golf2.pyc
golf_setup1.py
golf_setup1.py~
```

ANOTHER TERMINAL

```
CENG6838_TLH@D125-43873:~/catkin_ws$ ./baxter.sh
```

```
[baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws$ cd catkin_ws
bash: cd: catkin_ws: No such file or directory
```

```
[baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws$ python
golf_setup1.py
```

```
[INFO] [WallTime: 1455824651.803334] Robot Enabled
PASS: Valid joint configuration found
      request  actual
front back = 0.6000 0.6019
left right = 0.2000 0.1967
up down   = 0.1500 0.1505      .15 meters from end of gripper to table OK
roll      = -3.1416 -3.1415
pitch     = 0.0000 0.0006
yaw       = 0.0000 -0.0129
distance = 0.267              26 cm from camera to table.
arm = right
```

```
[baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws$ python golf2.py
```

(Baxter is not a good catcher!)

CALIBRATE GRIPPERS

```
CENG6838_TLH@D125-43873:~$ cd catkin_ws
CENG6838_TLH@D125-43873:~/catkin_ws$ ./baxter.sh
[baxter - http://172.29.64.200:11311] CENG6838_TLH@D125-43873:~/catkin_ws$ rosrn baxter_examples
gripper_keyboard.py
Initializing node...
Getting robot state...
Enabling robot...
[INFO] [WallTime: 1455827713.832704] Robot Enabled
Controlling grippers. Press ? for help, Esc to quit.
key bindings:
Esc: Quit
?: Help
z: left: decrease dead band
h: left: decrease holding force
f: left: decrease moving force
u: left: decrease position
```

v: left: decrease velocity
x: left: increase dead band
j: left: increase holding force
g: left: increase moving force
i: left: increase position
b: left: increase velocity
[: left: set 100% velocity
]: left: set 30% velocity
c: left: calibrate
q: left: close
w: left: open
r: left: reboot
s: left: stop
Z: right: decrease dead band
H: right: decrease holding force
F: right: decrease moving force
U: right: decrease position
V: right: decrease velocity
X: right: increase dead band
J: right: increase holding force
G: right: increase moving force
I: right: increase position
B: right: increase velocity
{: right: set 100% velocity
}: right: set 30% velocity
C: right: calibrate
Q: right: close
W: right: open
R: right: reboot
S: right: stop
command: left: calibrate
command: right: calibrate