User Documentation & Troubleshooting Guide
King's Legacy
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Resetting a Dynamixel ID

1. Navigate to **RoboCup-2018-Driving-Code/Dynamixel-Utilities**
2. Run the file **dxl_utils.py** in IDLE3, go to Run > Run Module
3. Follow the steps as outlined by the code

Testing A Servo's Capability

1. Navigate to **RoboCup-2018-Driving-Code/Dynamixel-Utilities**
2. Open the file **testServo.py** in IDLE3, go to Run > Run Module

Driving the EmuBot with Camera Feed

1. Go to any MacBook
2. Enter the password ("raspberry")
3. Connect to WiFi called Kings_Legacy.Emubot.1 (or .2, depending on which emuBot is being used) If prompted with password, enter "raspberry"
4. Open a terminal window
5. Enter **ssh pi@192.168.100.1**
6. Enter the password ("raspberry")
7. Enter **cd Desktop/Server-Code-2018/**
8. Enter **python3 RoboCupServer-Current.py**
9. The server is now running, leave this terminal window be

10. Navigate to **Desktop/RoboCup-2018-Driving-Code/CurrentEmuBotCode2**
11. Make sure the gamepad is plugged in to the laptop
12. Open **client.py** in IDLE3 and go to **Run > Run Module**

13. Go to, under the linux control bar at the top **Terminal > New Terminal**
14. In this new window, navigate to **Desktop/RoboCup-2018-Driving-Code/CurrentEmuBotCode2** via terminal
15. Enter **Start_MacStream_MVidPlayer.sh**

16. Go to, under the linux control bar at the top **Terminal > New Terminal**
17. In this new code window, follow steps 5-7
18. Enter **bash Start_PiStream.sh**
19. Cache should fill up and have a camera stream via mplayer

Driving the FlipperBot

1. Go to any MacBook
2. Enter the password ("raspberry")
3. Connect to WiFi called Kings_Legacy.Flipperbot (or .2, depending on which emuBot is being used) If prompted with password, enter "raspberry"
4. Open a terminal window
5. Enter **ssh pi@192.168.100.1**
6. Enter the password ("raspberry")
7. Enter **cd Desktop/Wless_Code_RC18/**
8. Enter **python3 RoboCupServer-Current.py**
9. The server is now running, leave this terminal window be

10. Navigate to **Desktop/RoboCup-2018-Driving-Code/Client-Code-2018/CurrentFlipperCode**
11. Make sure the gamepad is plugged in to the laptop
12. Open **client.py** in IDLE3 and go to **Run > Run Module**

13. Go to, under the linux control bar at the top **Terminal > New Terminal**
14. In this new window, navigate to **Desktop/RoboCup-2018-Driving-Code/Client-Code-2018/CurrentEmuBotCode2** via terminal
15. Enter **bash Start_MacStream_MVidPlayer.sh**

16. Go to, under the linux control bar at the top **Terminal > New Terminal**
17. In this new code window, follow steps 5-7
18. Enter **bash Start_PiStream.sh**
19. Cache should fill up and have a camera stream via mplayer

Driving Code Troubleshooting

- When running robot code:
    - Incomplete packet:

        - Make sure servos are recieving power and connected to the USB2AX
    - Wrong Header:
        - Source is unknown. Run the code multiple times until the error stops working. If repeated more than 10 times, reboot the robot, make sure all cables are plugged in and all hardware is recieving necesssary power requirements.
    - Broken Joint or Broken Wheel:
        - A number of servos would have broken. The ID will be displayed on the screen. The most common reason of this is if too much torque experienced by the servo. This is fixed by turning the servos on and off. If this error continues with no pressure on the servo, this servo will be required to be replaced.
- When running laptop code:
    - Broken Pipe error:
        - Make sure the robot's code is still running and does not contain print statments describing which joint or wheel is broken. See above "Broken Joint or Broken Wheel" after quitting the code and before repeating steps 6 and 8.

Camera Troubleshooting:

- Large amount of lag:

    - If this happens, within the code on the robot, decrease the frame rate and the size of each frame being sent. The lowest advised setting for frame rate is 10 fps and the lowest advised resolution for each frame is 720 x 480.

Sensors: CO2 and Temperature

1. Follow Steps 1-5 under "Driving the EmuBot"
2. Enter **cd Desktop/Server-Sensor-Code**
3. Enter **python3 sensors.py**

Sensors: Visual

1. Follow Steps 1-5 under "Driving the EmuBot"
2. Go to, under the linux control bar at the top **Terminal > New Terminal**

3. Enter **cd /Desktop/RoboCup-2018-Driving-Code/Sensor-Code-2018/Vision-Code**
4. Run any of:
    a. QR Code (**my_motion_QRCode.py**)
    b. Rotation Code (**my_motion_rotation_shadow.pyb)**

   With the command: bash **Start_MacStreamSensors.sh | python <filename>**
5. Make sure you're not running it in python 2!
6. Leave this terminal window be
7. Connect to robot WiFi
8. Go to, under the linux control bar at the top **Terminal > New Terminal**
9. Enter **ssh pi@192.168.100.1**
10. Enter the password ("raspberry")
11. Enter **cd Desktop/Server-Code-2017/**
12. Enter **bash Start_PiStream.sh**
13. Cache should fill up and have a camera stream via python

Sensors: Audio (Microphone)

1. On a mac, open a new terminal window
2. Enter **cd Desktop/RoboCup-2018-Driving-Code/Sensor-Code-2018/Audio-Code**
3. Enter **python3 audioServer.py**
4. Leave this terminal window be
5. Go to, under the linux control bar at the top **Terminal > New Terminal**
6. Enter **ssh pi@192.168.100.1**
7. Enter the password ("raspberry")
8. Enter **cd Desktop/Server-Sensor-Code/Audio-Code**
9. Enter **python3 audioClient.py**