

Setup:

WAP with 2.4GHz, 5GHz and 6GHz networks
2 computers with installed software (durin and aestream)
2 Durin robots
1 wireless keyboard
1 screen

Setup Connection:

Network SSIDs:

SSID	Password
NCSworkshop2.4	NCSworkshop2.4
NCSworkshop5	NCSworkshop5
NCSworkshop6	NCSworkshop6

Computer users:

User: ncs	Password: ncs	(no root access)
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Durin Robots:

User: ncs	Password: ncs	(no root access)
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Durin connection instructions:

Connect to WAP through one of the wifis

Power up durin (see below)

Ssh to selected durin:

ssh ncs@durin#.local (durin0 or durin1 → shown in the sticker on top of the eth port)

Durin hardware:

ToF sensor x8
IMU
EBV sensor (640 x 480)

Software:

Python requirements:

pip install aestream

pip install durin (if the package is broken the install from [repo](#))

Stream events from durin:

python3 stream_events.py (-i/--ip, -p/--port)

Receive data in computer (Example code):

```
if __name__ == "__main__":

    with aestream.UDPInput((640, 480), device = 'cpu', port=args.port) as stream:
        with Durin('durin0.local') as durin:
            try:
                while True:
                    frame = stream.read()           # receive events as frame
                    (obs, _, _) = durin.read()       # receive durin sensory data
                    durin(Move(y, x, r))            # ranges from -500 to 500
            except Exception as e:
                print(e)
```

Power on - Shutdown pipeline

Power on

- On the left side of the robot press once the button (next to the power supply)
 - An blue led should light up for a few seconds followed by an orange led
 - If the blue led becomes red/pink, the boot has encountered a problem. Press the power button for a few seconds to power down the robot and try rebooting
 - When the light becomes orange, press the power button once. It should turn green and power the onboard Durin computer
- From local computer, ssh to the Durin computer (you have to be connected to NCSworkshop# network)
(*ssh ncs@durin#.local*)
- From Durin computer, start the event streaming process to your computer's ip
(*python3 stream_events.py --ip X.X.X.X*)
- From local computer run your script that receives event and transmits command to Durin computer (*see above*)

Shutdown

- In durin computer, do:
sudo shutdown now
- Once there is no blinking white led in the Durin computer, it is safe to shutdown the robot
- Press the power button next to the power supply for a few seconds. The light should turn red. Realising the button shuts the robot down.

Notes

- For safety reasons, please do not operate the robot on a table outside the charging station
- Please include in your code security checks for hitting obstacles (e.g. TOF sensory input flags)
- Please check the battery status when using the robot to avoid sudden shutdowns.
- Please put the robots in the charger case and charge the robots upon leaving the workstation
- Ethernet connection avoids artifacts of lagged streamed events