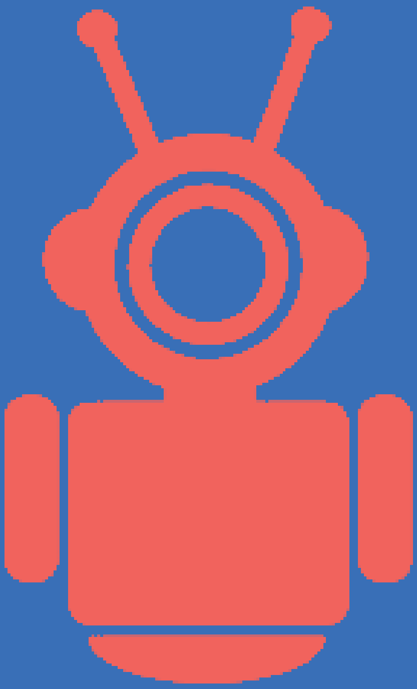
USER MANUAL



Automated Kiwifruit Picking

Test Drive

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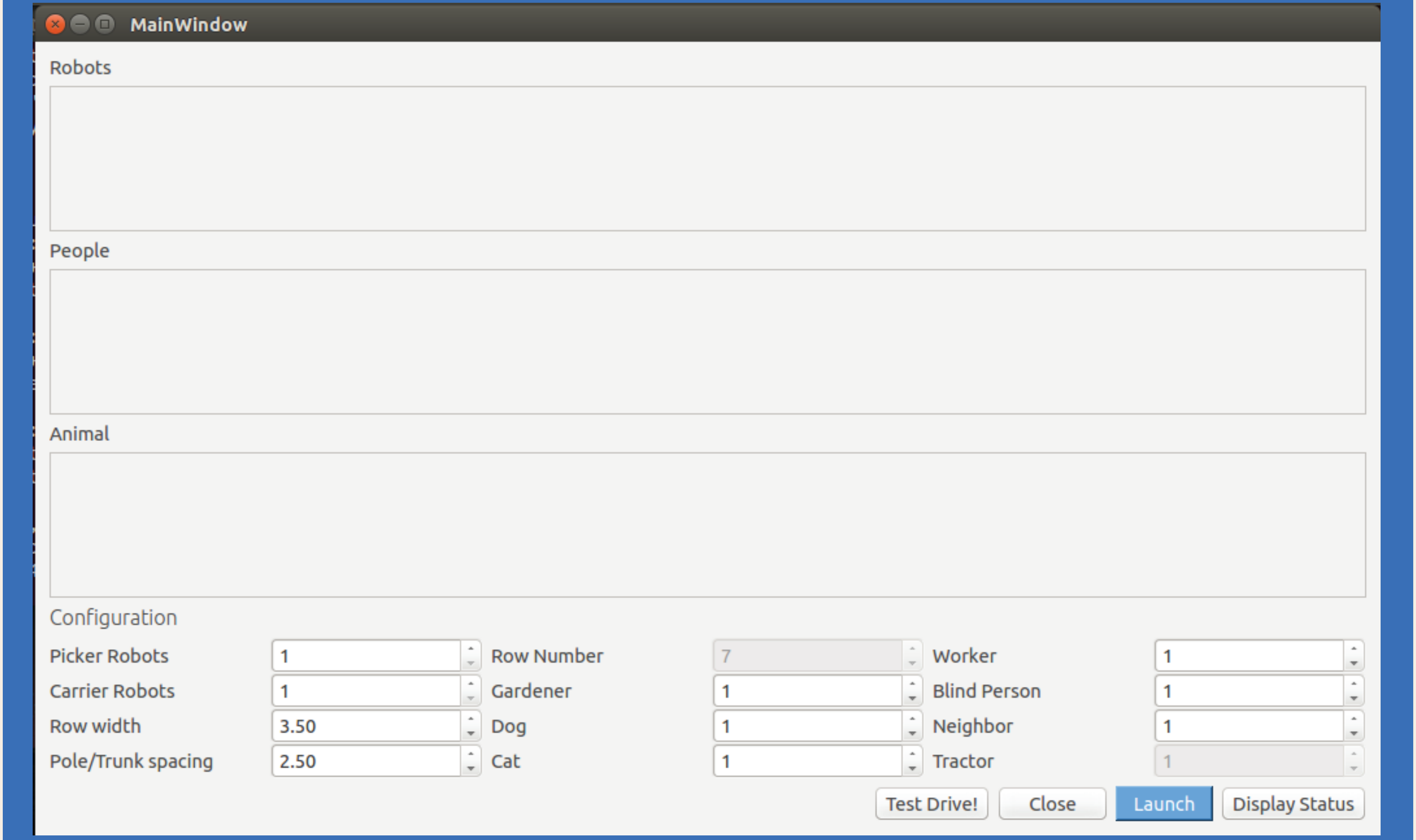
START-UP

The ROS simulation can be initialised by running the start-up script provided.
To do so, please navigate to the "se306project" folder in the linux terminal and enter the following command -
./startup.sh

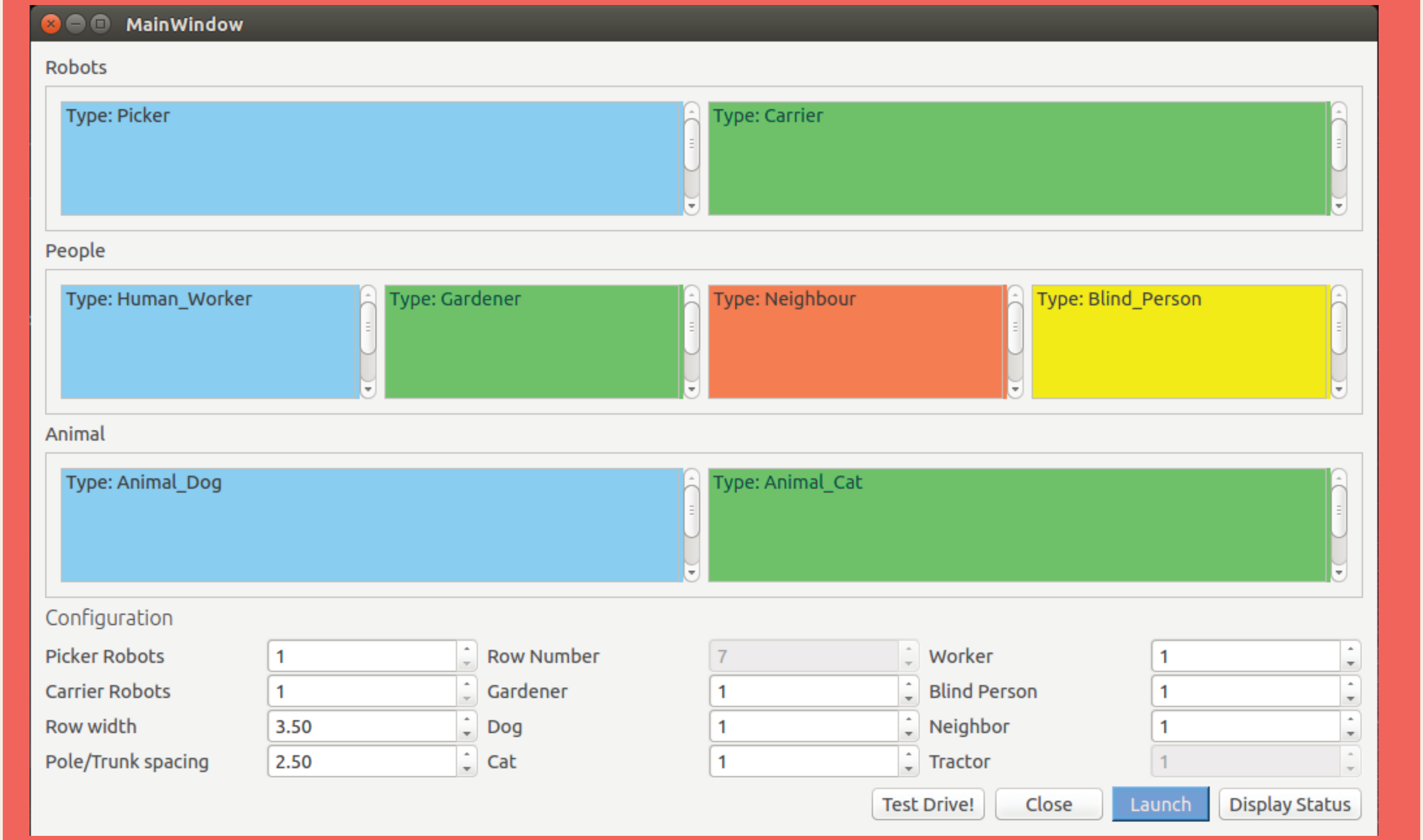


Picker Robots	1	Row Number	7	Worker	1
Carrier Robots	1	Gardener	1	Blind Person	1
Row width	3.50	Dog	1	Neighbor	1
Pole/Trunk spacing	2.50	Cat	1	Tractor	1

Figure - 1.0

The script will compile & launch the project. Once the project has been successfully compiled the following interface will be presented.
The world of the simulation can be configured on this interface. Simply, enter the desired number of each world component and select the "Launch" button.

STATUS



Robots

Type: Picker

Type: Carrier

People

Type: Human_Worker

Type: Gardener

Type: Neighbour

Type: Blind_Person

Animal

Type: Animal_Dog

Type: Animal_Cat

Configuration

Picker Robots	1	Row Number	7	Worker	1
Carrier Robots	1	Gardener	1	Blind Person	1
Row width	3.50	Dog	1	Neighbor	1
Pole/Trunk spacing	2.50	Cat	1	Tractor	1

Figure - 2.0

During the simulation the statuses of the world components, such as the picker robot, can be followed on the interface.

For the picker and carrier robots the colour of the panel represents the colour of the robot in Stage.

Status Fields:

Type: What the world component is.
pos_x: The component’s x position.
pos_y: The component’s y position.
pos_theta: The component’s facing angle.
status: Current action, such as moving or idle.
obstacle: Whether the component has encountered an obstacle.

STAGE

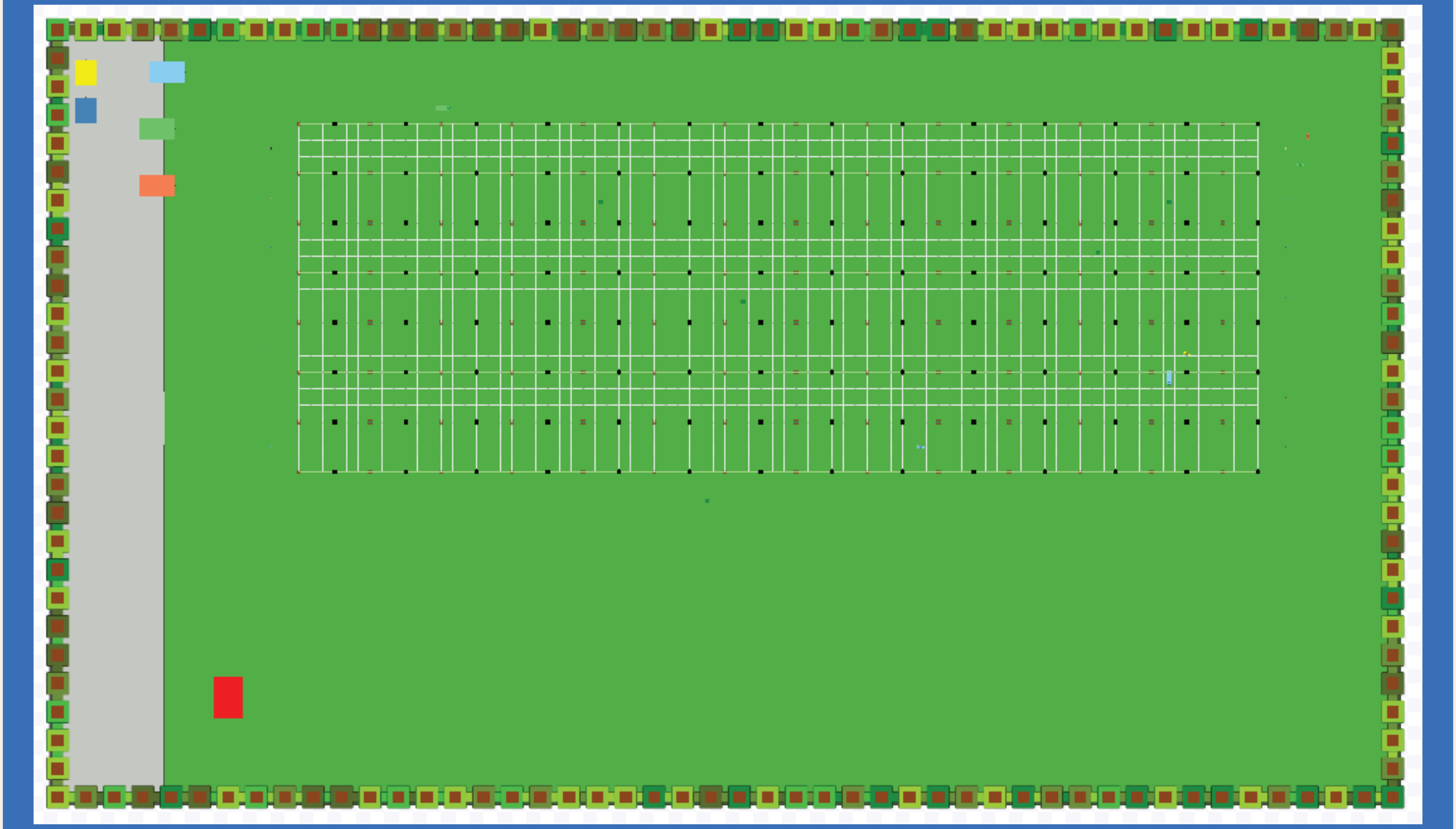
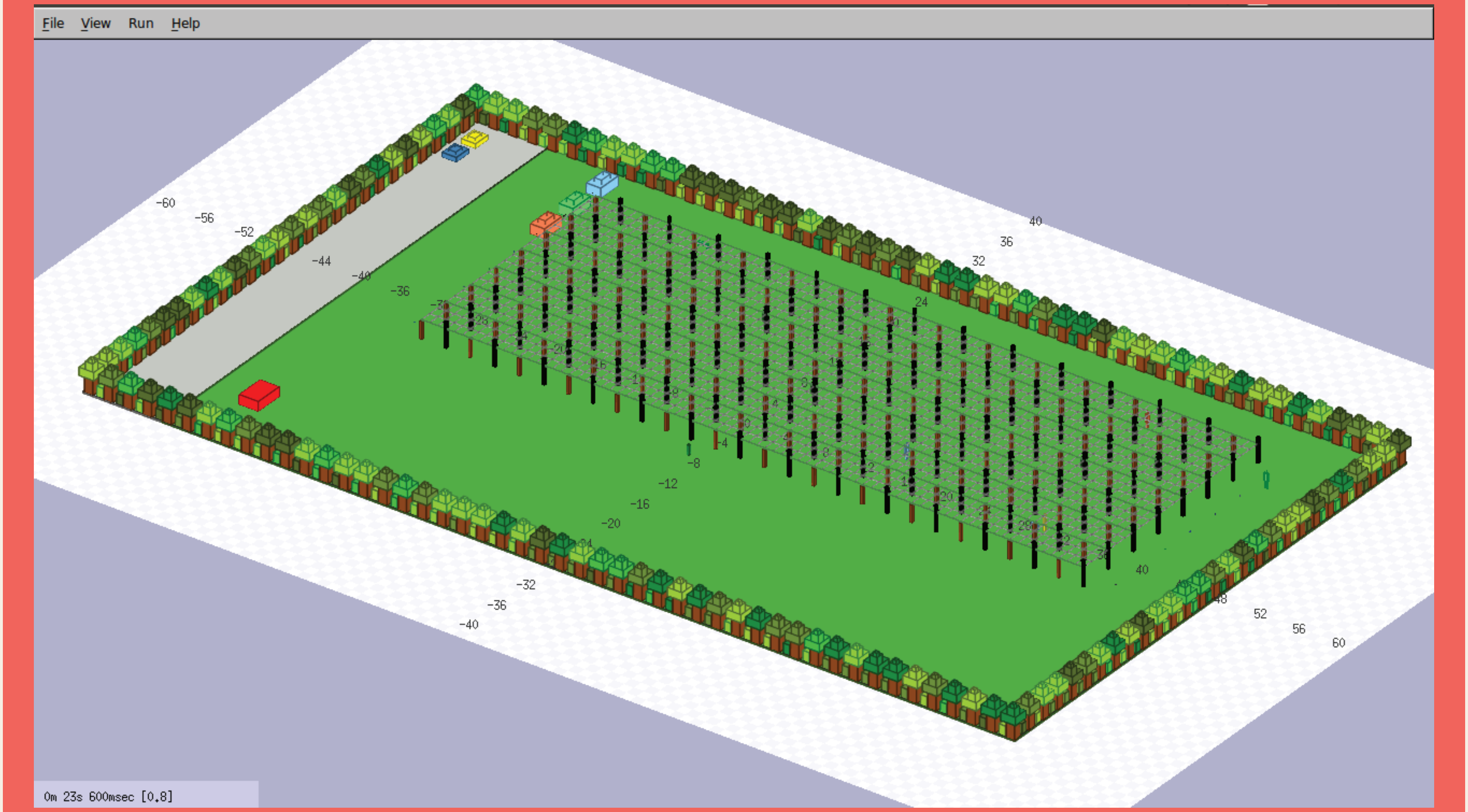


Figure - 3.0

The simulation can be viewed on the Stage window once the “Launch” button on the interface has been pressed. Here the simulation of the robots picking kiwifruits can be viewed; combined with the environment components, such as the worker and dog components.

To close the Stage window press the “Close” button the interface.

STAGE - PERSPECTIVES



```
0m 23s 600msec [0.8]
```

Figure - 4.0

To change the view perspective in Stage press the “ctrl” key on the keyboard and hold the left mouse button. Then, move the mouse in the direction for the desired change in perspective.

STAGE - TOGGLE LASER

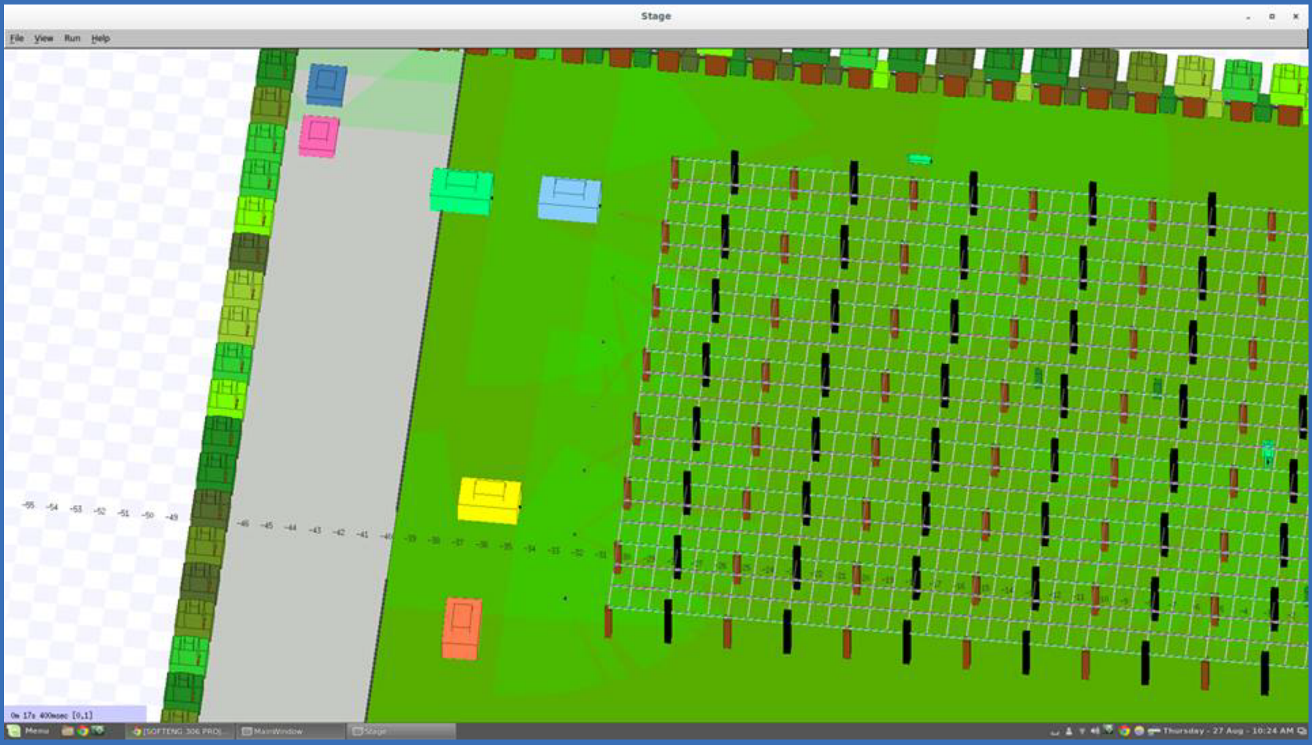


Figure - 4.0

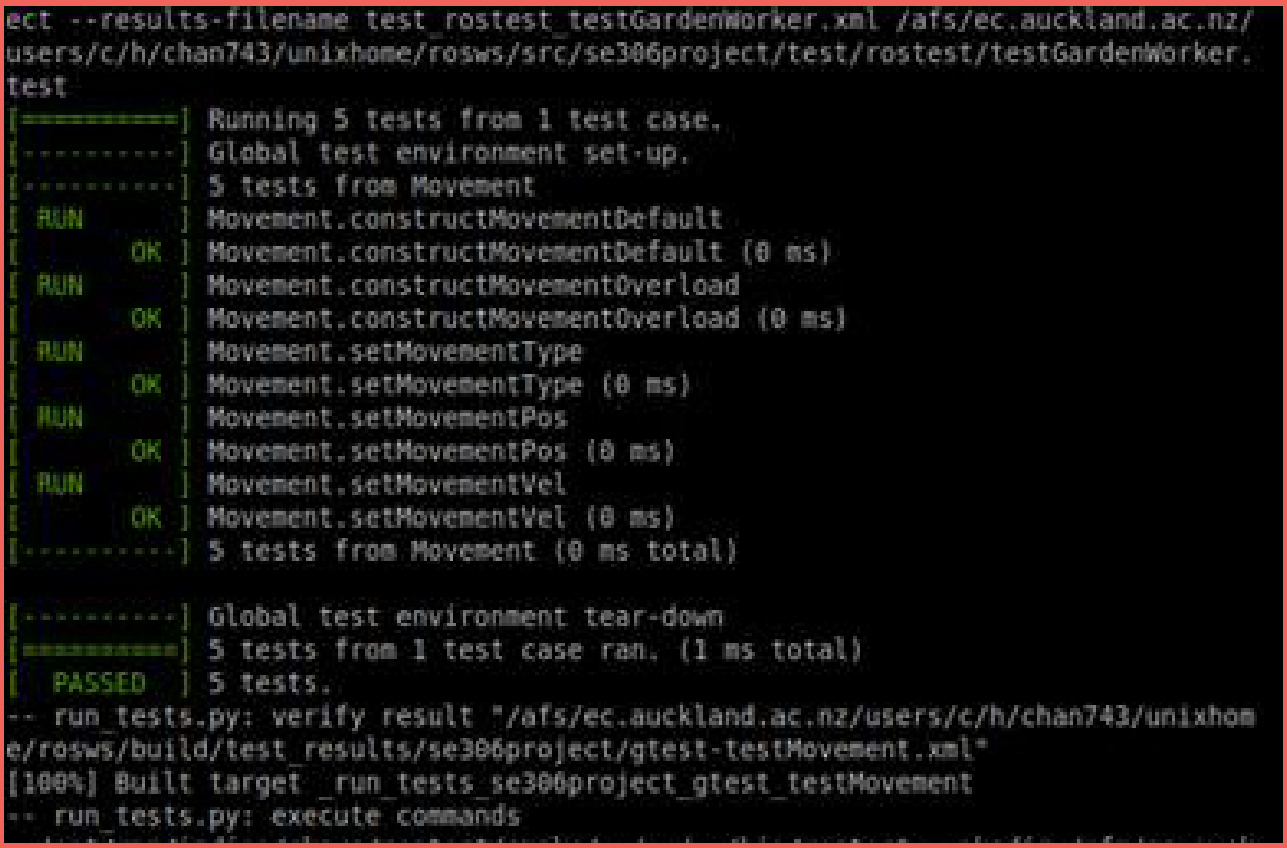
To view the lasers emitted by each world component, such as the picker robots, press the “D” key on the keyboard.

This will show the lasers that are emitted and used by the world components for functions such as obstacle detection.

The lasers can be toggled off in the same manner as turning them on.

TESTING

To run the test scripts relating to the simulation please navigate to the “se306project” folder in the linux terminal. Then proceed to enter the following command - “./test.sh”.



```
ect --results-filename test_rostest_testGardenWorker.xml /afs/ec.auckland.ac.nz/
users/c/h/chan743/unixhome/rosws/src/se306project/test/rostest/testGardenWorker.
test
[==========] Running 5 tests from 1 test case.
[----------] Global test environment set-up.
[----------] 5 tests from Movement
[ RUN      ] Movement.constructMovementDefault
[       OK ] Movement.constructMovementDefault (0 ms)
[ RUN      ] Movement.constructMovementOverload
[       OK ] Movement.constructMovementOverload (0 ms)
[ RUN      ] Movement.setMovementType
[       OK ] Movement.setMovementType (0 ms)
[ RUN      ] Movement.setMovementPos
[       OK ] Movement.setMovementPos (0 ms)
[ RUN      ] Movement.setMovementVel
[       OK ] Movement.setMovementVel (0 ms)
[----------] 5 tests from Movement (0 ms total)

[----------] Global test environment tear-down
[==========] 5 tests from 1 test case ran. (1 ms total)
[  PASSED  ] 5 tests.
-- run_tests.py: verify result "/afs/ec.auckland.ac.nz/users/c/h/chan743/unixhom
e/rosws/build/test_results/se306project/gtest-testMovement.xml"
[100%] Built target _run_tests_se306project_gtest_testMovement
-- run_tests.py: execute commands
```

Figure - 6.0

The results of the tests will be displayed on the same terminal window.

There are tests for the world’s components, such as the carrier robots.

If a test has failed then the file and line number where the error occured will be shown in the terminal window.