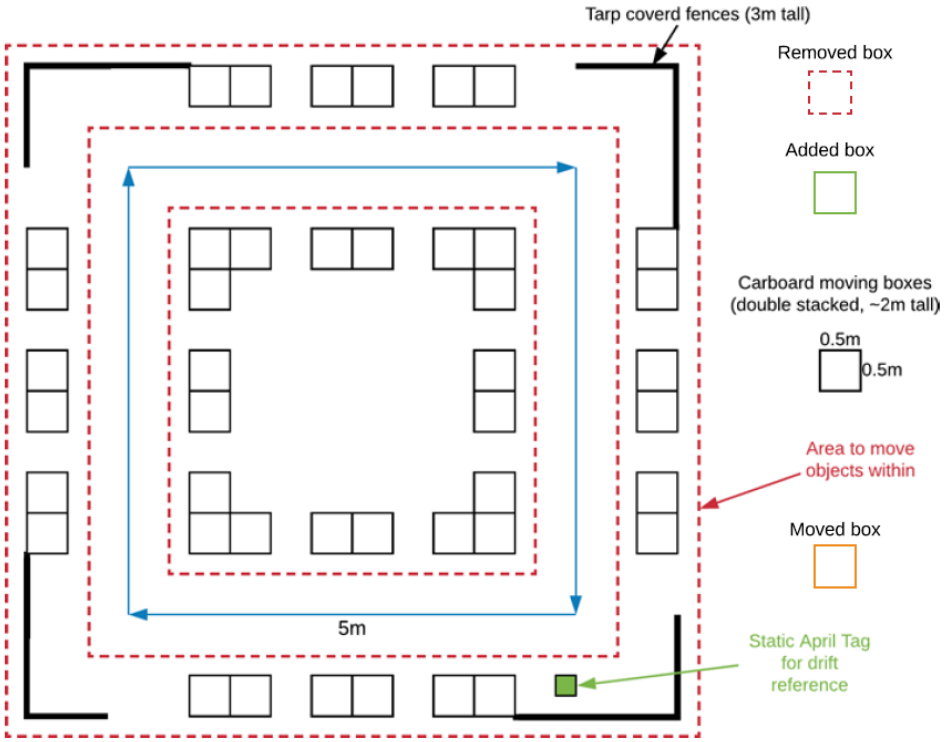
Localization Real-World Scenarios

Overview

This page describes the test setup for a real-world localization stress test. The intention of these scenarios is to collect data and validate localization in a highly dynamic environment.

Scenario Setup



The test setup includes two main obstacles:

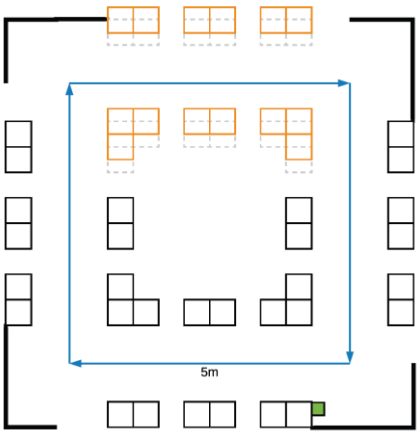
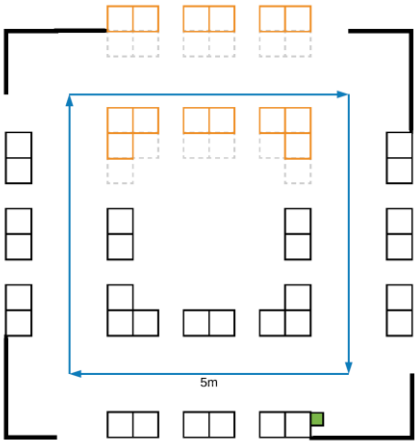
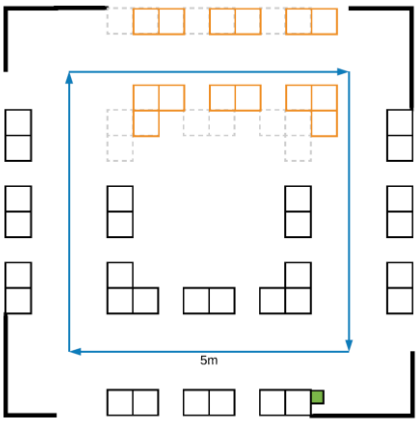
1. Carboard Moving Boxes:
    a. ~100 carboard moving boxes are used as dynamic obstacles in order to simulate a warehouse environment
    b. Boxes will we double stacked in order to make an obstacle that is ~2m tall, this is required in order to obstruct the camera view sufficiently.
2. Tarp covered fencing
    a. The large fences are ~3m tall, there are 5x3m sections and 4x1.5m sections
    b. The large fences are used at the ends of the aisles in order to block the camera view of the surroundings as much as possible.

The last additional feature is an AprilTag marker which is used are a static reference for evaluation purposes.

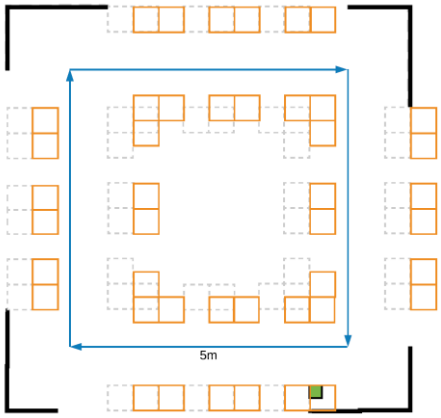
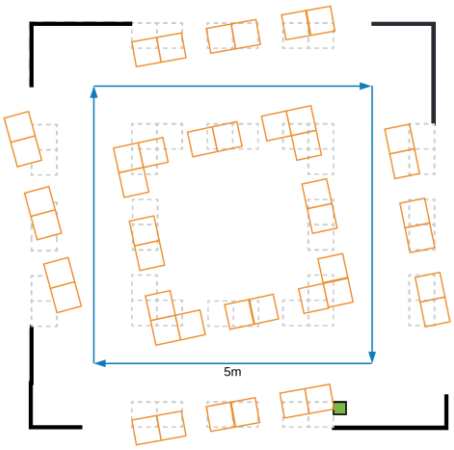
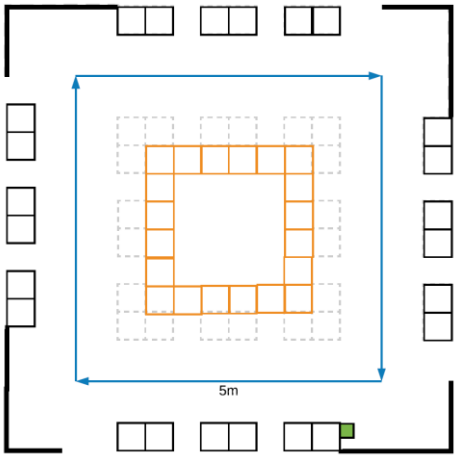
© 2022 Clearpath Robotics Inc. All rights reserved.

Scenarios

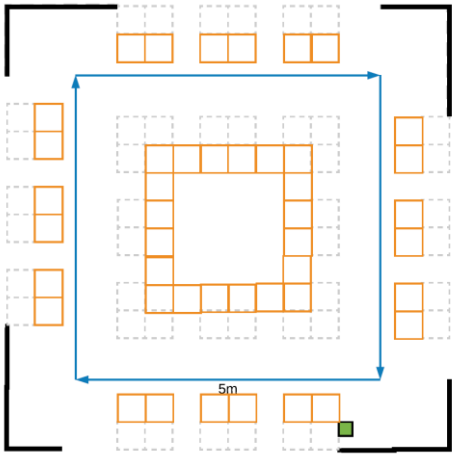
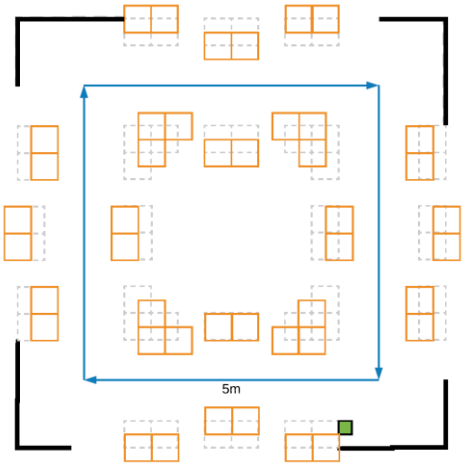
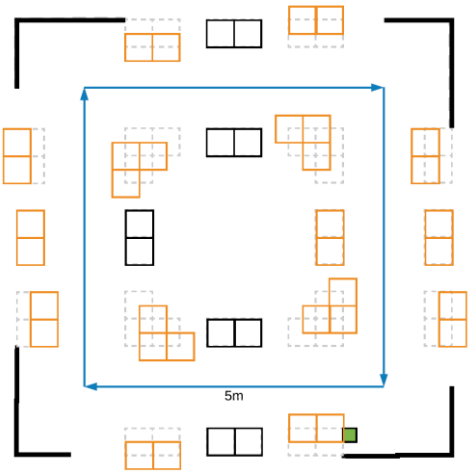
Each scenario will consist of a loop around the circuit. Between each loop, a defined set of the obstacles will be moved in known ways.

Test #	Description	Delta from baseline
0	**Baseline**	Baseline loop without any moved obstacles as seen on Page 1
1	**Box shifts and rotations**	
1-1	Top row shift	
1-2	Larger shift	
1-3	Longitudinal shift	

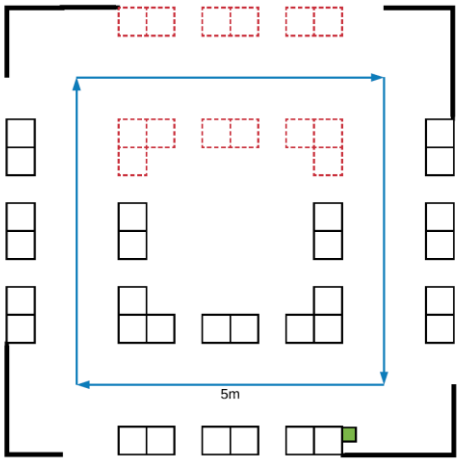
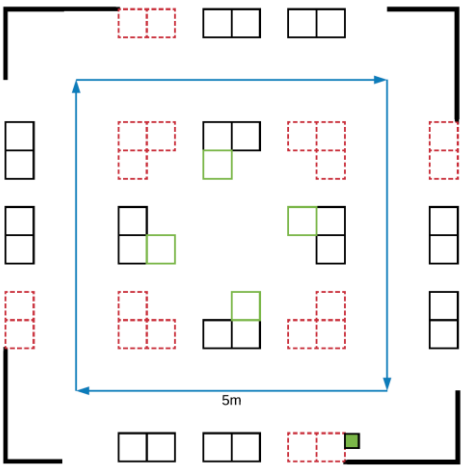
© 2022 Clearpath Robotics Inc. All rights reserved.

1-4	All boxes shift	
1-5	All boxes rotate	
1-6	Inner shrink	

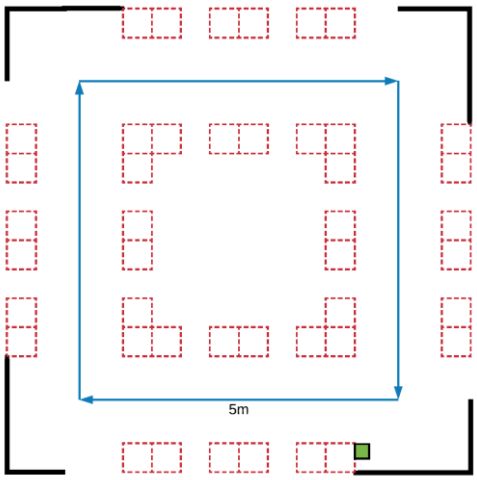
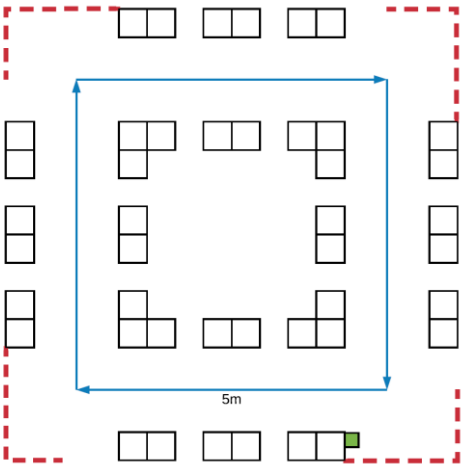
© 2022 Clearpath Robotics Inc. All rights reserved.

1-7	All shrink	
1-8	Alternating in and out	
1-9	Stepping outward	

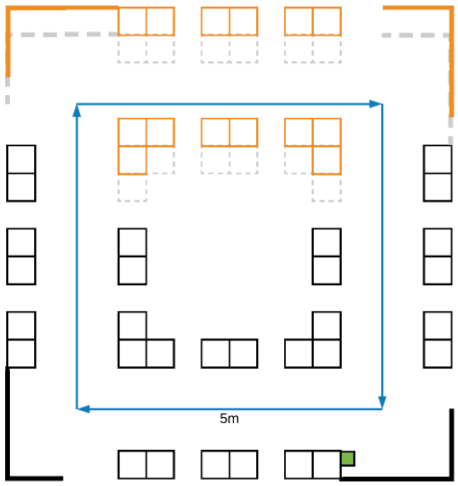
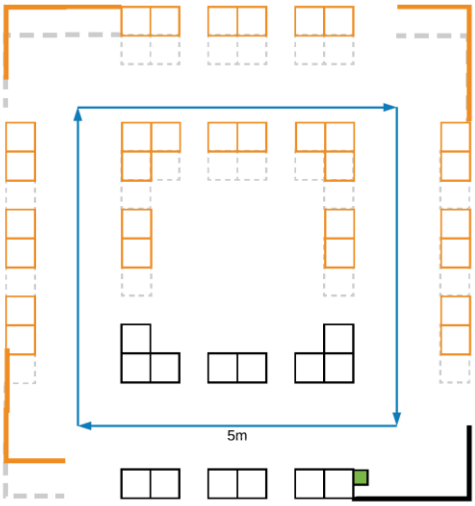
© 2022 Clearpath Robotics Inc. All rights reserved.

2	**Removing Boxes**	
2-1	Remove top row	
2-2	Remove corners	

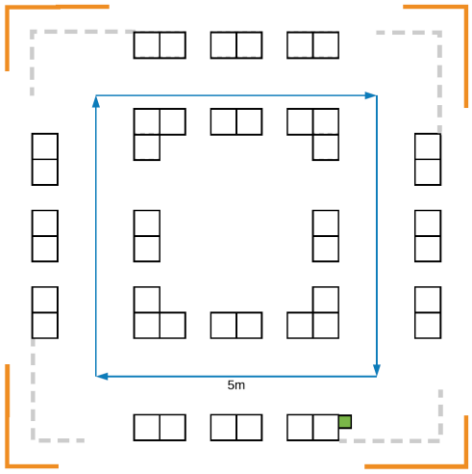
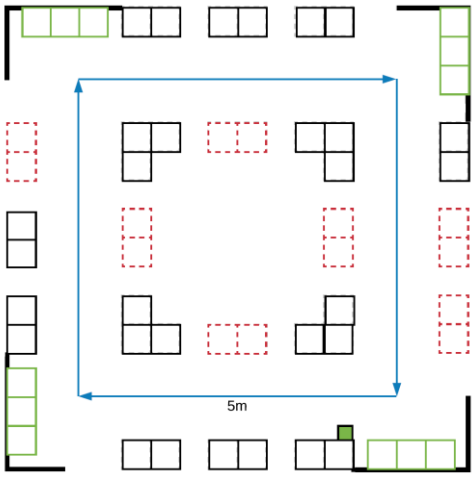
© 2022 Clearpath Robotics Inc. All rights reserved.

2-3	Remove all boxes	
2.4	Remove fences	

© 2022 Clearpath Robotics Inc. All rights reserved.

3	**Moving Fences**	
3-1	Top row shift with fences	
3-2	top row shift with sides	

© 2022 Clearpath Robotics Inc. All rights reserved.

3-3	Fences move outward	
4	**Adding new Boxes**	
4-1	Cover the fences with boxes	

© 2022 Clearpath Robotics Inc. All rights reserved.

© 2022 Clearpath Robotics Inc. All rights reserved.