FINAL14 – MOVING OBSTACLES (MO)04

National Institute of Standards and Technology

ARIAC NIST
Agile Robotics for Industrial Automation Competition

Trial Description

- **Task**: Build **2** shipments from 1 single order, on opposite AGVs. In this scenario there are two persons moving in aisles #1 and #2. These persons are obstructing the path of the robot from accessing products that are required in both orders. The robot has to plan a path to access aisles #1 and #2 without colliding with the moving persons. Colliding with any of the moving persons will set the score to 0 for this trial.
  - The conveyor belt is used.
  - There are faulty products in the environment.
  - Grippers are faulty and will drop products over both AGVs.
  - 2 obstacles which obstruct the path of the robot from accessing products on shelves.

- **Orders**: 1 order with 2 shipments: order_0::shipment_0 and order_0::shipment_1.
  - Both shipments are identical and consist of 4 products in total:

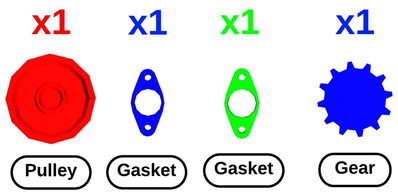

Fig. 1: Products used in shipments for order_0.

- **Maximum completion score**: 32 pts.
- **Agility challenges**:
  - Faulty products.
  - Faulty gripper.
- **Product vessels**: bin × 1, shelf × 1, conveyor belt is used.
  - **Shipment deliveries**:
    - order_0::shipment_0: AGV1.
    - order_0::shipment_1: AGV2.
  - **Time limit**: 500 sim seconds.

Initial Product Placement

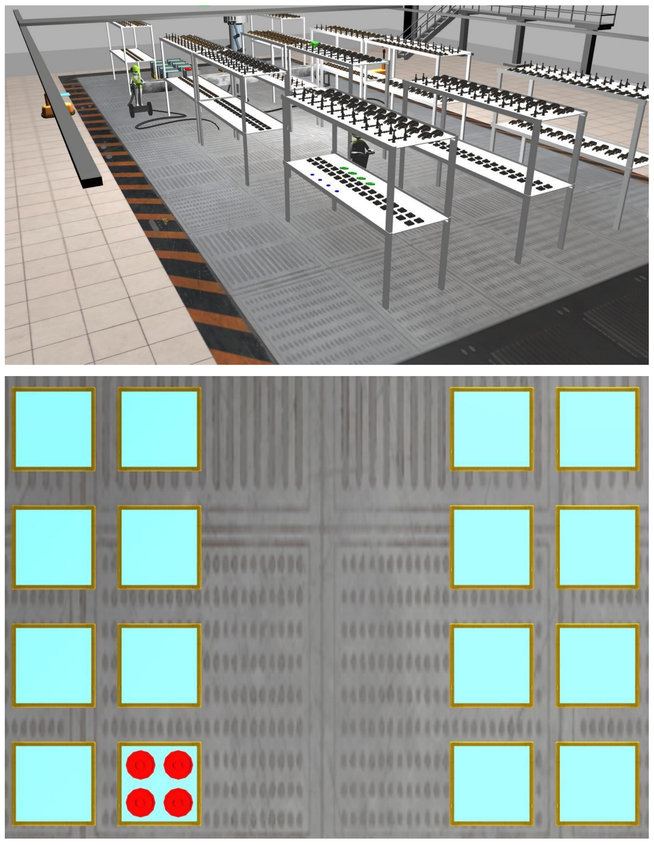

Fig. 2: Initial product placements.

Agility Challenges

- Faulty products: There are 4 faulty products in the environment. 2 are in the bin, 1 is on the shelf, and 1 is on the conveyor belt.

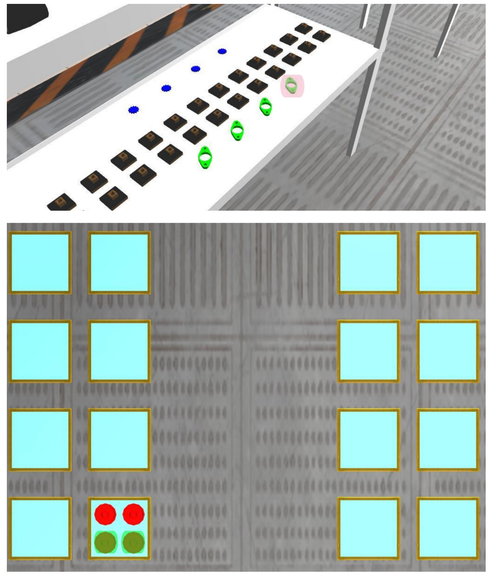

Fig. 3: Faulty products in the environment.

- Faulty grippers: 1 blue gasket is expected to drop over AGV1. 1 blue gear is expected to drop over AGV2.

Orders

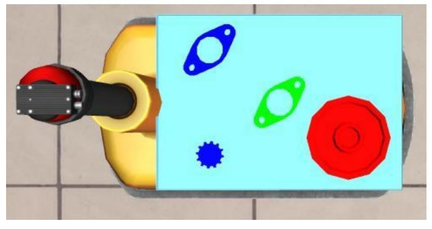

Fig. 4: order_0::shipment_0 configuration on AGV1.

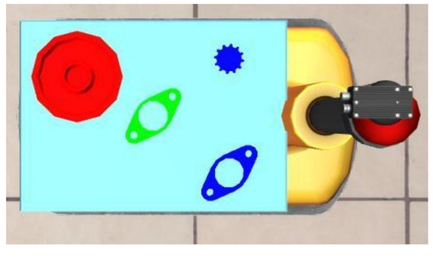

Fig. 5: order_0::shipment_1 configuration on AGV2.