FINAL13 – MOVING OBSTACLES (MO)03

National Institute of Standards and Technology

ARIAC NIST
Agile Robotics for Industrial Automation Competition

Trial Description

- **Task**: Build **2** shipments from 2 orders. An initial order is interrupted by a higher-priority order (hpo). In this scenario there is one person moving in aisle #2 and another one in aisle #3. These persons are obstructing the path of the robot for accessing products that are required in both orders. The robot has to plan a path in aisles #2 and #3 to access these products. 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.
  - 2 obstacle which obstruct the path of the robot from accessing products.
  - 2 pulleys must be flipped.

- **Orders**: 2 orders. order_0 consists of 1 single shipment (order_0::shipment_0). order_1 consists of 1 single shipment (order_1::shipment_0).
  - The shipment in order_0 consists of 3 products in total:

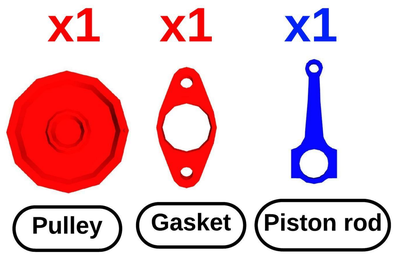

Fig. 1: Products used in shipment for order_0.

  - The shipment in order_1 consists of 2 products in total:

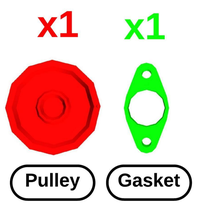

Fig. 2: Products used in shipment for order_1.

- **Maximum completion score**: 20 pts.
- **Agility challenges**:
  - Faulty products.
  - Flipped products.

Product vessels:

- bin × 1, shelf × 2, conveyor belt is used.
- **Shipment deliveries**:
  - order_0::shipment_0: AGV1.
  - order_1::shipment_0: AGV2.
- **Time limit**: 500 sim seconds.

Initial Product Placement

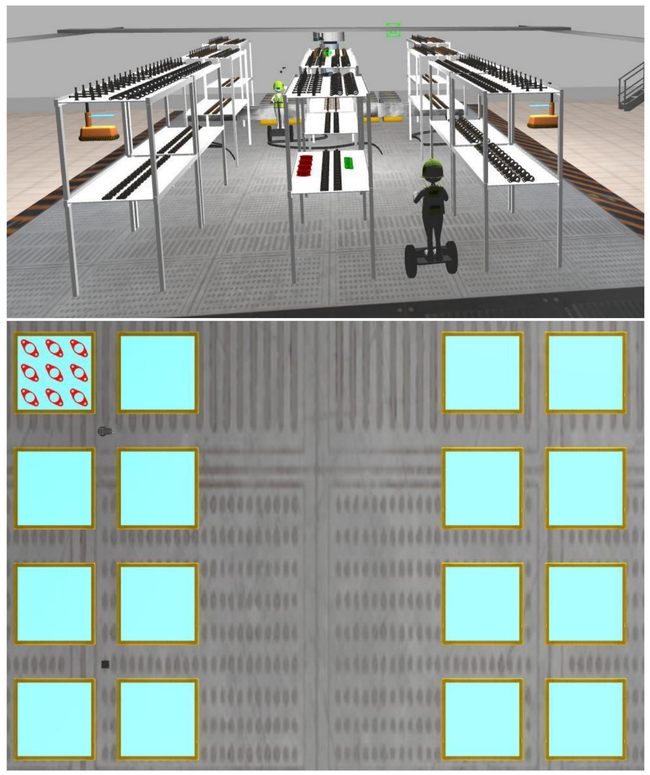

Fig. 3: Initial product placements.

Agility Challenges

- Faulty products: There are 2 faulty products in the environment. One is in the bin and the other one is **on the conveyor belt**.

Fig. 4: Faulty products in the environment.

- Flipped products: 1 red pulley from the shipment in order_0 and 1 red pulley from the shipment in order_1 must be flipped. Figures 5 and 6 highlight the flipped pulleys in the shipments.

Orders

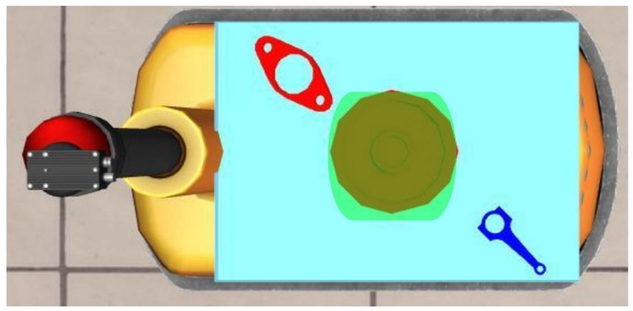

Fig. 5: order_0 shipment configuration on AGV1.

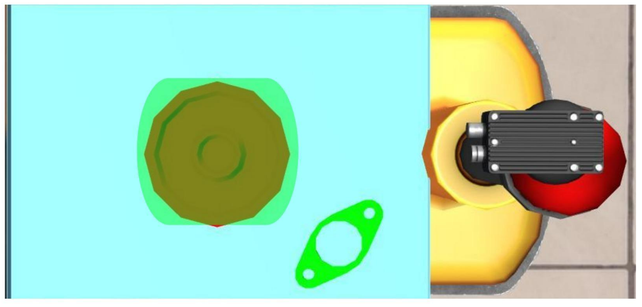

Fig. 6: order_1 shipment configuration on AGV2.