FINAL07 – HIGH-PRIORITY ORDER (HPO)02

National Institute of Standards and Technology

ARIAC NIST
Agile Robotics for Industrial Automation Competition

Trial Description

- **Task**: Build **2** shipments from 2 orders. The initial order is interrupted at a convenient time by a second order, which is of higher priority (hpo). The robot must complete hpo as fast as possible and then must resume the completion of the initial order.
  - The conveyor belt is not used.
  - There are faulty products in the environment.
  - 2 pulleys must be flipped.

- **Orders**: This trial consists of 2 orders (order_0 and order_1) with 1 shipment each (order_0::shipment_0 and order_1::shipment_0).
  - order_0::shipment_0 consists of 3 products in total:

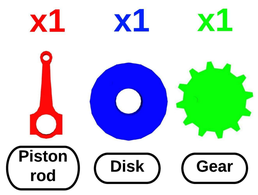

Fig. 1: Products used in order_0.

  - order_1::shipment_0 consists of 2 products in total:

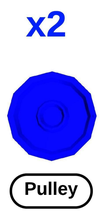

Fig. 2: Products used in order_1.

- **Maximum completion score**: 20 pts.
- **Agility challenges**:
  - Faulty products.
  - Flipped products.
- **Product vessels**: bin × 6, shelf × 0, conveyor belt is not used.
- **Shipment deliveries**:
  - order_0::shipment_0: AGV1.
  - order_1::shipment_0: AGV2.
- **Time limit**: 500 sim seconds.

Initial Product Placement

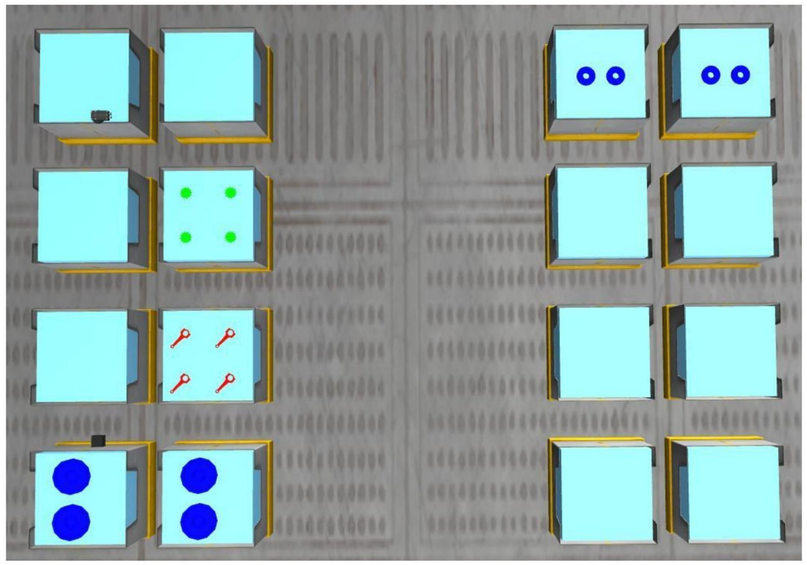

Fig. 3: Initial product placements.

Agility Challenges

- Faulty products: There are 6 faulty products in the environment.

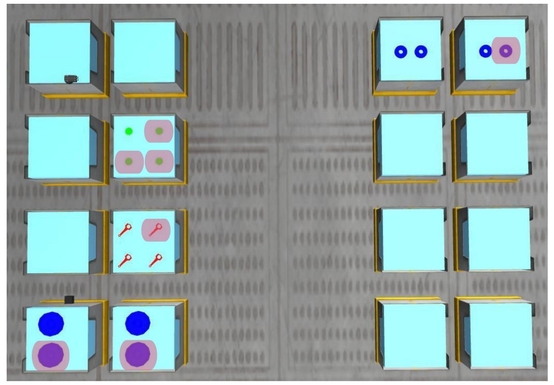

Fig. 4: Faulty products in the environment.

- Flipped products: 2 blue pulleys must be flipped for order_1::shipment_0. Figure 6 highlights the flipped pulleys.

Orders

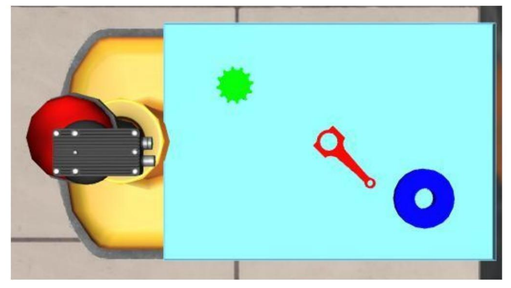

Fig. 5: order_0::shipment_0 configuration on AGV1.

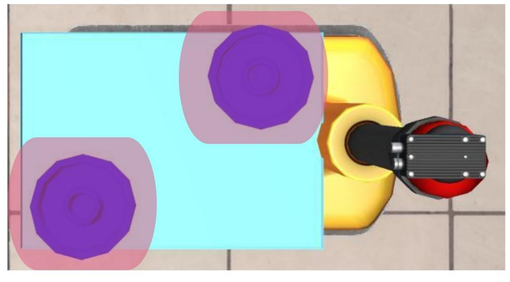

Fig. 6: order_1::shipment_0 configuration on AGV2.