

Cobot Based Quality Checking Process

The project:

This project centers on the design and implementation of a simulated COBOT-based system integrated with a production line to automate the categorizing, based on some quality parameters of hypothetical chocolate bars.



Fig. 1: Laboratory Set up, Source: own

The goal:

The Universal Robot is used to take the chocolate bar from the end of a production line and to place it on the Quality Checking Machine. After the quality machine checks the chocolate bar it will be taken again from the Quality Machine and is categorized within different Spots. The programming had to be done according to the Flow Chart.

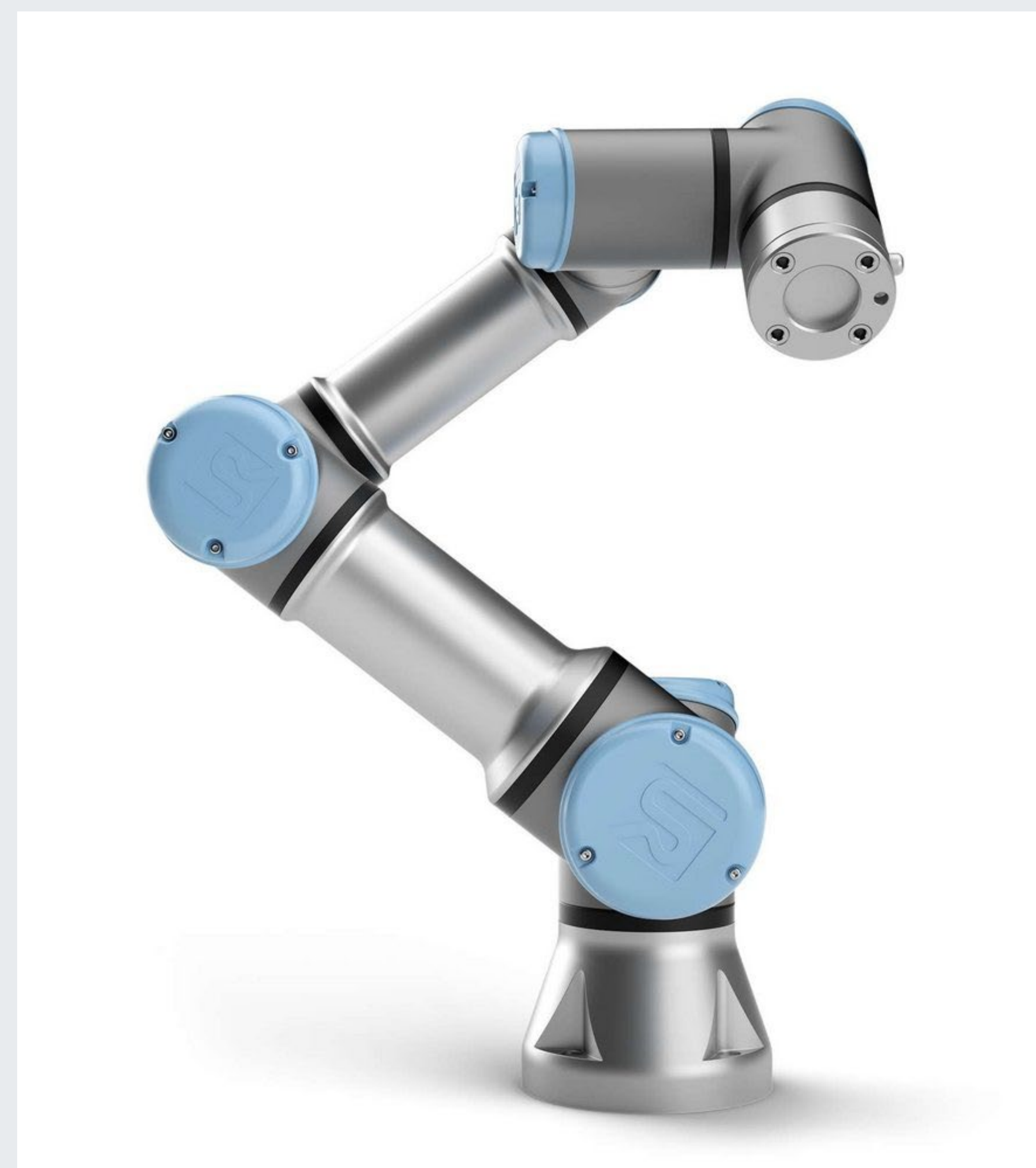


Fig. 2: UR Robot, Source: Internet

3D Printing:

For the project we had to design a magazine (Fig. 3a) which is used to pick the chocolate bars from. The design is measured and tolerances were taken in to account with a caliper to define the length, diameter, distance of the screws and holes. The magazine was first printed with a 3D printer then mounted on the metal plate to secure the chocolate bars. A vacuum gripper (Fig. 3b) was added to the Cobot to securely transport the bars.



a)

b)

Fig. 3: a) Magazine; b) Vacuum Gripper

The result:

At the end of the project we programmed the UR Cobot according to the Flow Chart and the layout (Fig. 4). Spot A is the space where the magazine is mounted and from here the chocolate bar is picked up and moved to Spot B where the quality checking is done. After the quality check the chocolate bars will be categorized if they meet the quality standards or not. The collaborative robot takes the checked bar and transports it to the Spot (F, E or D). The process goes on till there is no bar at Spot A.

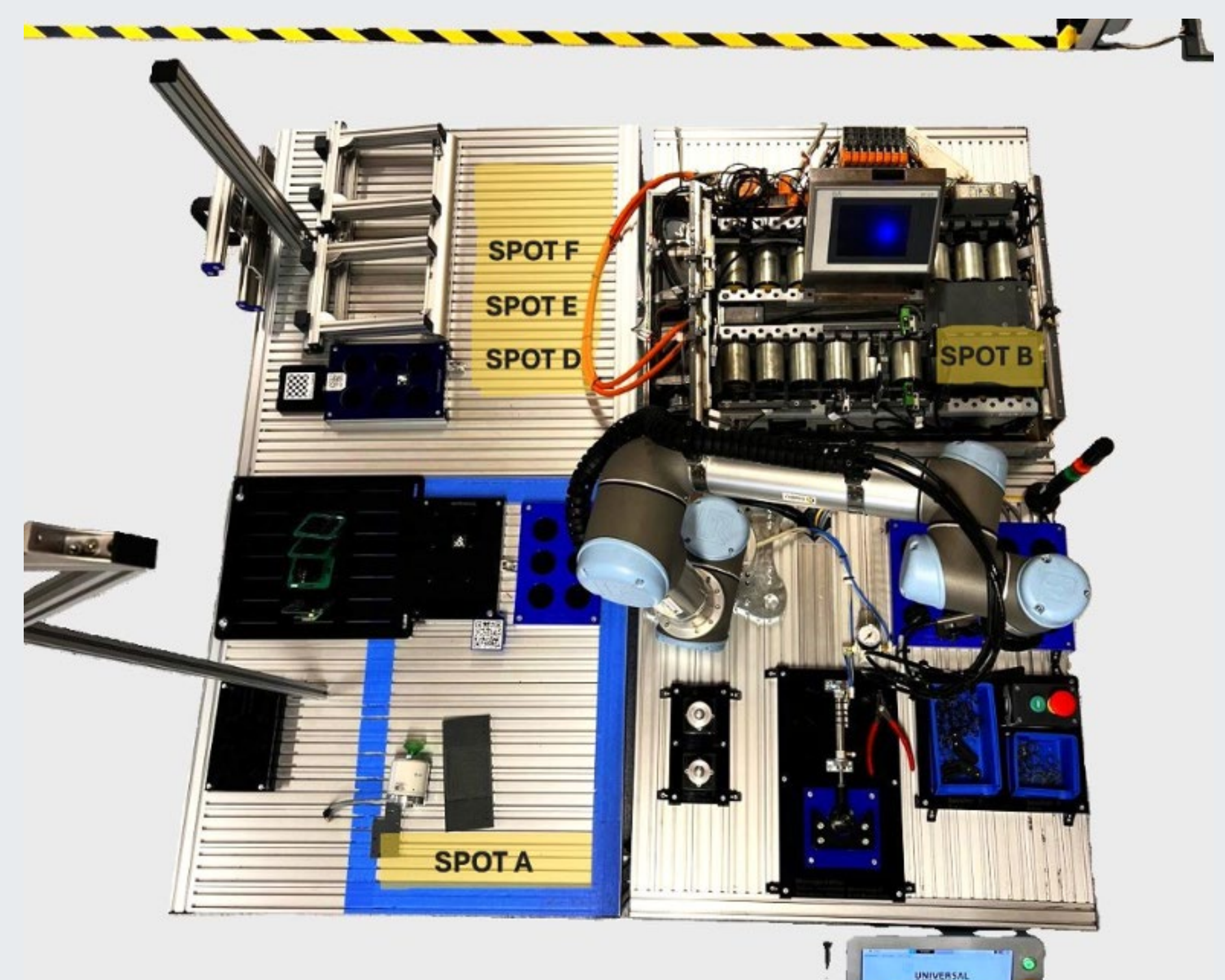


Fig. 4: Layout of the production line

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