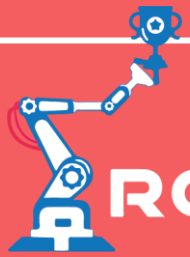


ROBOCUP

The Case
Test for Success

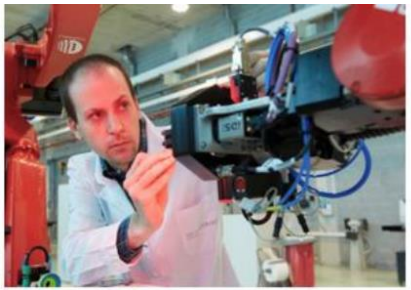
Introduction for RoboCup 2nd Challenge

Introduction for Collaborative Robotics

Type of Robots in Industry:

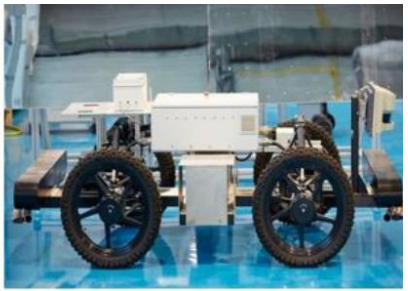
CONVENTIONAL ROBOTS

Applications in complex processes that require integration of sensors and advanced processing



COLLABORATIVE ROBOTS

Human-robot collaboration in the same workspace to perform collaboartive tasks such as components assembly



SERVICE ROBOTS

Robots for applications demanding mobility in the plant for intra-logistic or maintenance operations

Introduction for Collaborative Robotics

Why collaborative?

- Physical interaction with human beings
- Safety / Security
- New challenges (AI, Neural Networks)

Introduction for Collaborative Robotics

Main Manufacturers

- Universal Robots
- Omron
- KUKA
- Abb
- Fanuc

Introduction for Collaborative Robotics

Main applications

- Screwdriving
- Part Insertion

ASSEMBLY

- Gluing
- Sealing
- Painting

DISPENSING

- Sanding
- Polishing

FINISHING

- CNC
- Injection molding

MACHINE TENDING

- Packaging
- Palletizing
- Bin Picking

MATERIAL HANDLING

- Grinding
- Drilling

MATERIAL REMOVAL

- Testing
- Measuring

QUALITY INSPECTION

- Arc
- Soldering

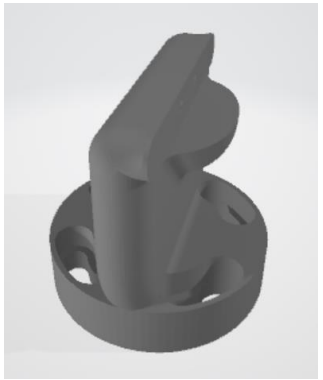
WELDING

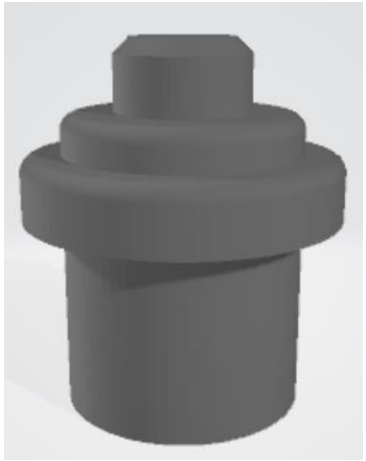
OTHER

Our Case

Design from previous challenge:

- MATERIAL HANDLING
  - Design of a collaborative gripper
    - No pneumatics
    - No electronics
    - Pure Mechanics
  - Pieces to handle
    - Adapt for handling
    - Good/bad material check

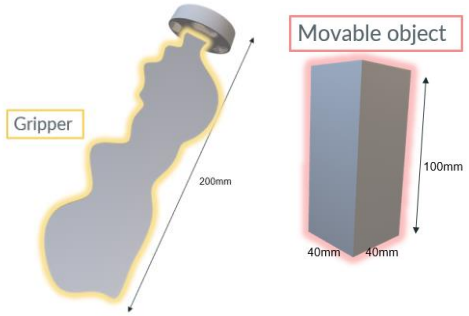




Our Case

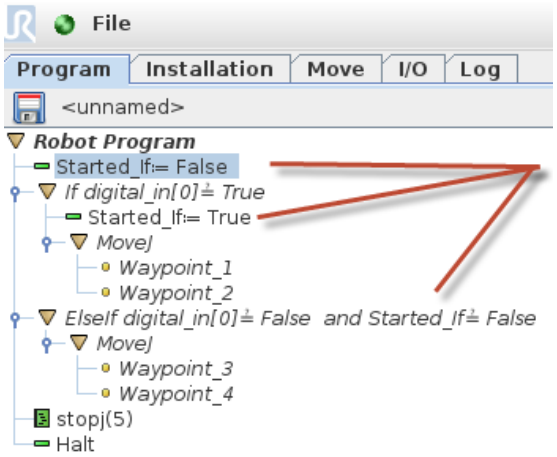
PREVIOUS CHALLENGE SOLUTION:
Movable object:
- 3x stackable in different ways

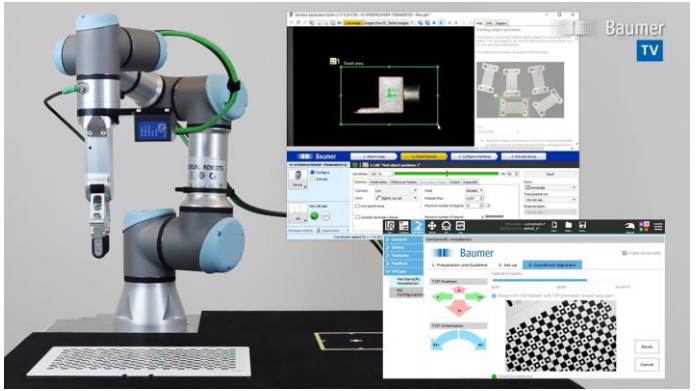
Geometric restrictions:



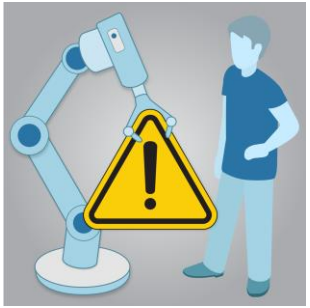
Our Case

- UR Robot Programming
  - Easy to understand
  - Organized
  - Easy to change (positions,...)
  - Different types of palletizing / Different options
    - Different size pallets
    - Stack in different ways
      - Different positions
      - One on top of another





Our Case



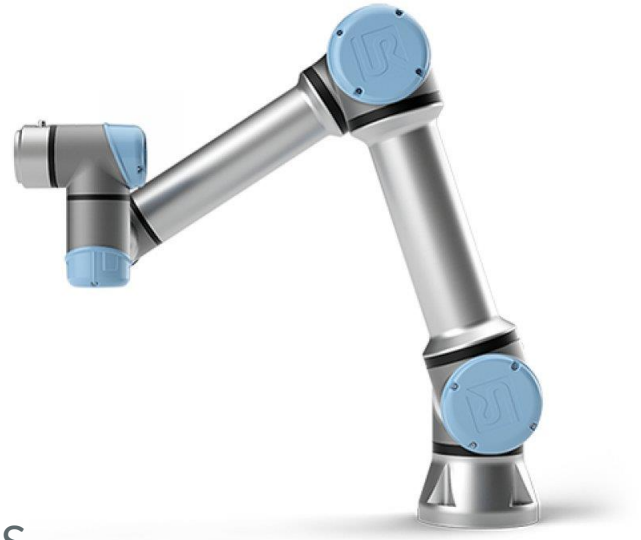
Focus on Safety!

Write a program which is capable of palletizing a 3x3x3 matrix of the movable objects made from the last challenge.

Both block-programming and scripting can be used to accomplish this task!

Documentation

- Presentation: Prepare to explain your SOLUTION
    - FRIDAY-9:00
- Documentation/Report:
  (Replicate the Project)
    - Task Explanation
    - Objectives of the project
    - Steps done
    - Materials/Tools/Software used
    - Conclusions

Software

- UR VIRTUAL MACHINE FOR TESTING
  - DOWNLOAD & MANUAL
- SUBLIME TEXT 3
- SSH CLIENT: PUTTY
- MICROSOFT OFFICE 365 OR GOOGLE DOCS