RobMoSys

Human-Robot Collaboration for Assembly

Pilot Sheet

RobMoSys defines a platform of assets and services to help **robotics industry to improve their software/system engineering practice**. Join us to **work together to create this ecosystem** and to demonstrate your own success story with **real world cases** in line with our **industrial pilots**.

Description

In the context of human-robot collaboration, the operator interacts with the robot with no fences and influences the task execution. Thus, taking into account the context and more generally the environment for task definition is both mandatory and challenging at the modeling level.

Human-robot collaboration raises also important safety requirements related to the robot, the tool, the task and the environment.
Therefore, safety and more particularly risk assessment is a major feature that this pilot aims to realize and validate.

Expected Benefits

The pilot is intended for open call 2 contributors to showcase system robustness through task reusability and safety checking at design time.
Once the task and the environment are well described, it is then easier for the integrators to rely on the tools for the risk assessment and to deduce the possible damages caused by each task in the environment.

This pilot uses Papyrus4Robotics to comply with RobMoSys methodology.

The technical expected benefits of the pilot are:

- Easy task description
- Task reusability: Task invariance to slight changes of the environment and/or hardware choices;
- Using most updated norms in order to validate the configuration (environment/robots/humans).
- Automatically identifying potential failures that could not be predicted by safety experts;

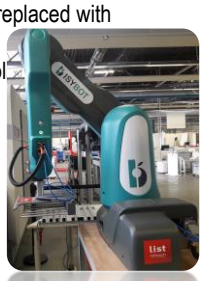
Scenario Examples

The pilot demonstrates task and environment definition for a human-robot collaboration use case: Pick & Place through RobMoSys tools. The interaction between the robot and the operator is direct (with no fences) for carrying a heavy object from a given position to a target one.

This pilot uses Isybot collaborative robot but ITP can also test and enrich RobMoSys safety functionalities with any other collaborative robot performing a pick and place task.

Potential use cases for ITP are:

- Extend the pilot with new components for manipulation tasks
- Task reusability after a hardware/software component replacement. For example a gripper replaced with another.
- Risk assessment with RobMoSys tool constraints on the robot actions based on the environment including the operator.
- Reuse safety properties in different contexts : “Composable Safety”

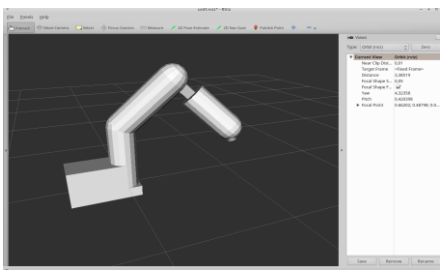


Pilot Resources

A simple Pick and Place task [1] with Isybot robot is available for contributors as an exemplary application to use, to modify or to build upon.

- Virtual machine with all necessary tools, software and documentation. Eclipse and Papyrus tool, ROS Lunar and ROS stack for Isybot, A specification document for describing the use case and the modeling steps, and a preliminary version of a risk assessment.

[1] https://robmosys.eu/wiki/pilots:hr-collaboration



Get involved in the **Second RobMoSys Open Call!**

Further information at: **www.robmosys.eu**

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