trinity

AR-BASED OPERATOR SUPPORT IN HRC TUTORIAL

First Name Last Name
Affiliation – Other Info

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Component overview

- Aids operators that work in a hybrid, human and robot collaborative industrial environment

- AR based Operator support module increases human operator safety awareness, during human robot collaborative assembly tasks.

- Supports the human operator, through visual signals and notifications, in order to be aware of the execution status of every operation and the status of every resource.

- Provides to the operator the ability to navigate the mobile robot if considered necessary.

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Environmental requirements

This module applies in specific areas inside the whole workplace.

Must be identified before start using it so the module will be customized according to task executed there.

Voice commands are used by the AR Operator Support module.

It is **unsuitable** for noisy workplaces.

Too bright/dark lightning can cause problems to module's utility.

Light should be even and **sufficiently bright** a human can see without effort.

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Pre-requisites

Software	Hardware
Windows 10 Professional	PC (CPU: X64 architecture with SSE2 instruction set support, RAM: , GPU: DX10, DX11, and DX12-capable)
Unity 2020.3.8+	Windows Mixed Reality headsets
Blender 2.60+	Microsoft HoloLens 2

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Input and Outputs

Input:

- List of assembly tasks that need to be executed
- Assigned resource for each task
- Assembly instructions
- System recovery instructions
- Dimensions of robot safe working volumes

Output:

Visualization – superimpose of virtual information in the operators' field of view:

- Assembly/system recovery instructions,
- Virtual buttons,
- Robot behaviour information for increasing safety awareness,
- Safe working volumes,
- Production status information

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Benefits of integration

The Developed System provides:

- Easy to learn / Easy to use tool

- Easy and Quick robot programming

- Quick recovery from process failures

- Error avoidance

- Applicability for multiple robot platforms

- Applicability for different AR devices

- End-to-end Integration from Robot to Human Side

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