

The logo for Trinity Robotics, featuring the word "trinity" in a white, lowercase, sans-serif font. The background is a dark blue gradient with abstract, colorful shapes in shades of blue, purple, and red.

Collaborative Assembly with Vision-Based Safety System
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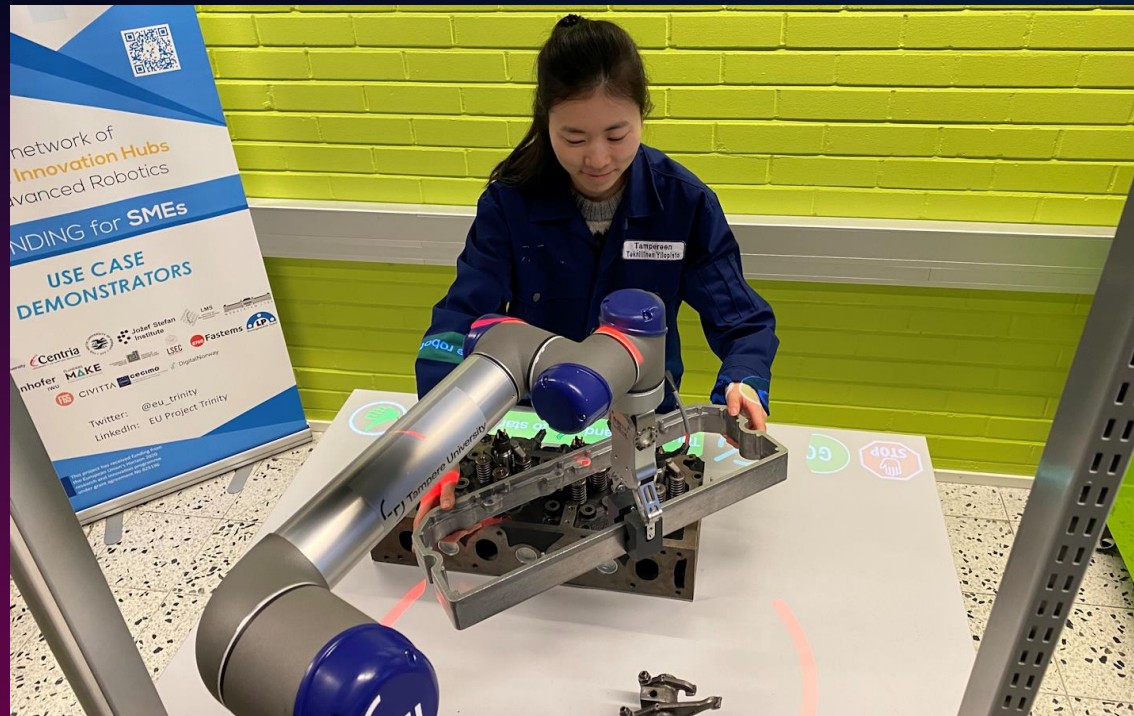
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Outline

- Motivation
- Safety Model
- Structure of the Demonstrator
- Assembly task example

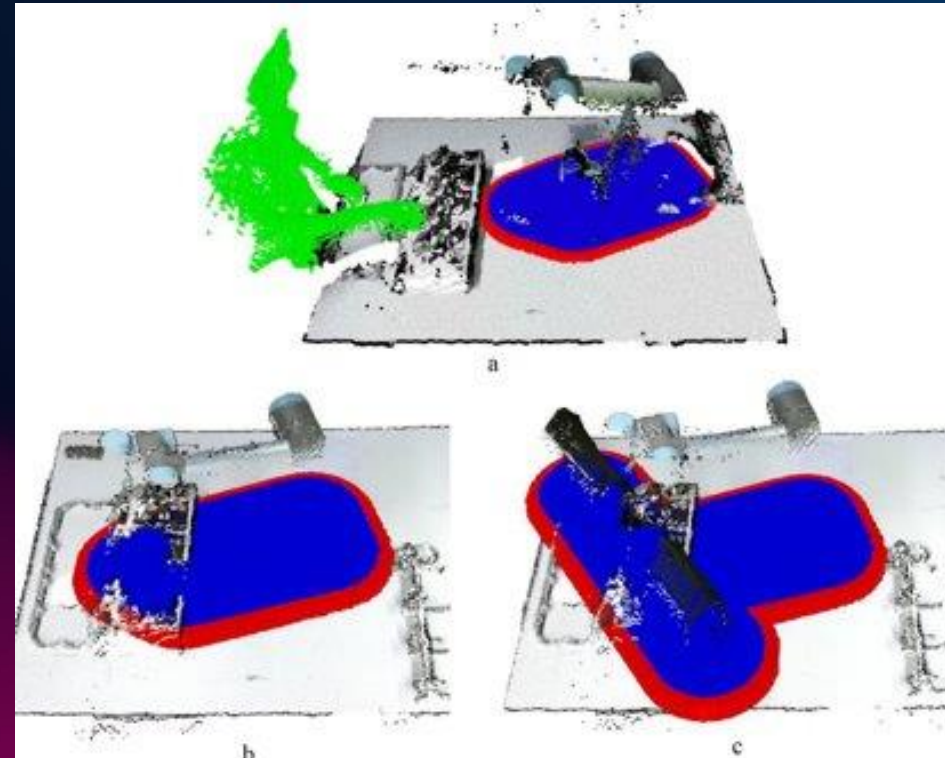
Motivation

- Robot cells with high level of human-robot collaboration can have significant impact on raising the output and efficiency of small businesses
- However, such environments can cause safety hazards for operators, so special care for human safety is needed.
- In this work we define a model to monitor safety margins using a depth sensor.



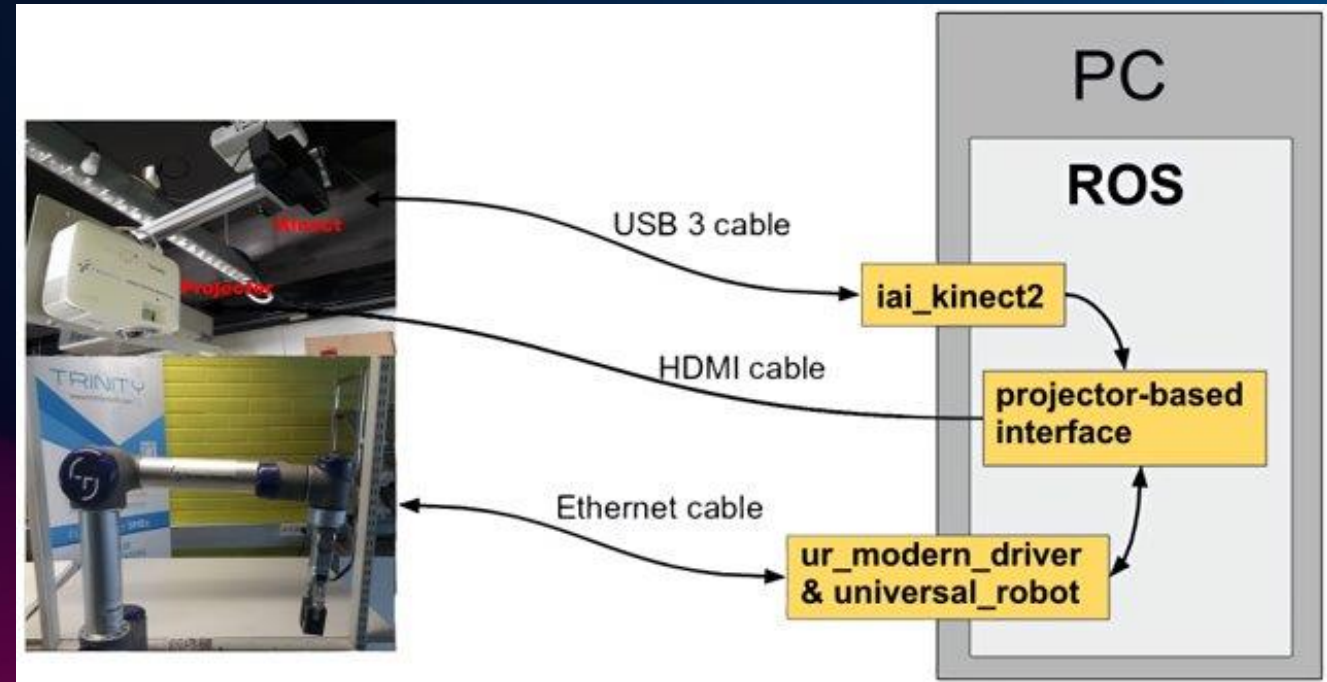
Safety Model

- The work area is divided into two zones: human area and robot area
- The zones can update during manufacturing process
- If zone's border is violated, robot halts
- The zones are stored as depth map



Structure of the demonstrator

- The demonstrator consists of four main nodes:
 - Depth Sensor node
 - Safety system node
 - Interface node
 - Robot node
- The nodes communicate between each other using ROS
- The software is executed on linux laptop



User interface types

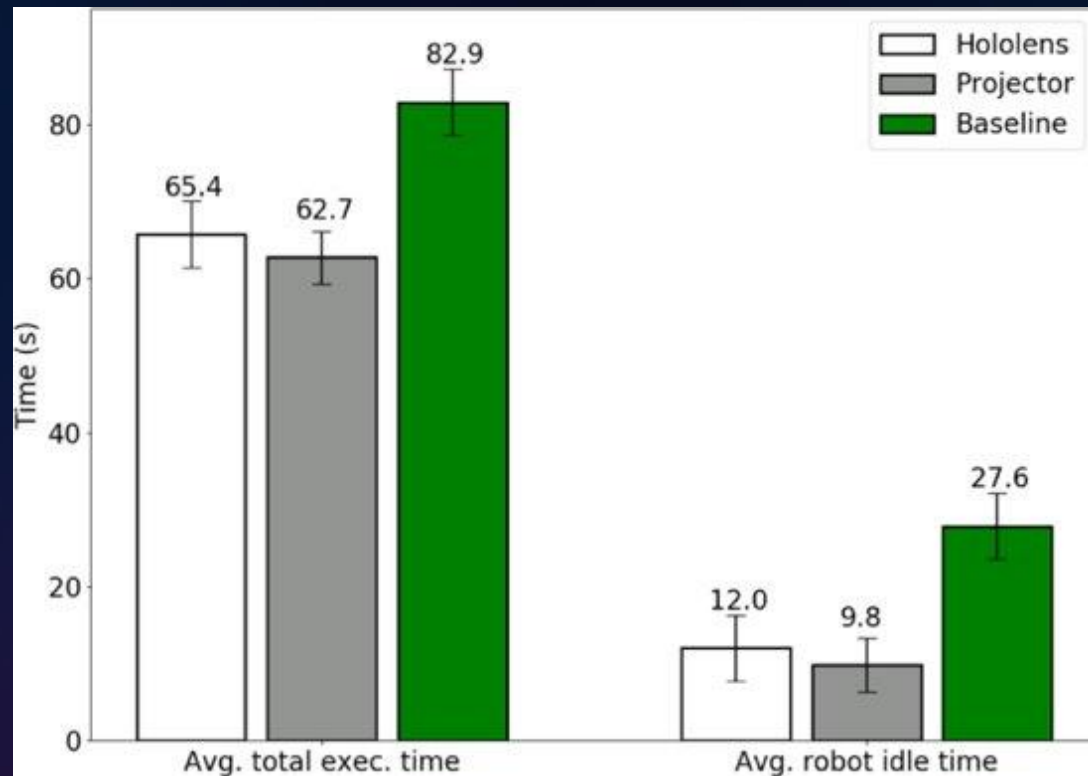


Assembly task



COLLABORATIVE ASSEMBLY WITH
VISION BASED SAFETY SYSTEM

Comparison with baseline





trinity

Thank you!

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