Interaction detection and projection using ROS2 for Industrial Spatial Augmented Reality (ISAR)

Thema:
: Interaction detection and projection using ROS2 for Industrial Spatial Augmented Reality (ISAR)

Art:
: BA, MA

BetreuerIn:
: Raphael Wimmer / Nicolas Heuser (Extend3D)

Status:
: Entwurf

Stichworte:
: augmented reality, 3D, C++, ROS, Programmierung

angelegt:
: 2021-11-13

Hintergrund

Externe Bachelor-/Masterarbeit bei Extend3D (München)

Im Rahmen des Forschungsprojekts VIGITIA arbeiten wir mit der Firma Extend3D zusammen. Diese bietet ein Thema für eine Bachelor- oder Masterarbeit an.

Zielsetzung der Arbeit

Processes can be created and adhered to during production but documenting and intuitively guiding workers through the process are still challenging in modern augmented reality applications. Implement techniques with which the interaction can happen on the work piece instead of on a nearby computer. Bring interaction to life with accurate dynamic projections.

Integrate and test different state-of-the-art interaction detection mechanisms in ROS2 by developing an interactive industrial prototype. Analyze the achievable speed and accuracy at runtime, as well as the robustness under varying environmental conditions. Finally, evaluate the setup/training effort required.

Konkrete Aufgaben

(werden bei Interesse besprochen)

Erwartete Vorkenntnisse

Your profile:

- C++ programming skills (C++, ROS, STL, Boost, OpenGL)
- Interest in Augmented Reality
- Basic understanding of image processing and 3D coordinate transformations or motivation to learn it
- Motivation and endurance

Weiterführende Quellen

Nach Absprache mit dem Betreuer.