HIGH PRECISION PROJECTION SYSTEM (INESC TEC)

The use of a projection-based augmented reality tool with 3D perception to assist human operators when performing marking and cutting of a metal structure. The solution allows the operator to work faster and without requiring measurement tools. It can also be used to assist the human operator when programming collaborative robots for cutting operations by providing visual guidance of the task.

Video

https://bit.ly/3OCWb3w

Involved partners

INESCTEC

Technology

The projection mapping solution relies on a 3D perception system, a 3D rendering SDK and a 4K DLP projector to project information directly in the target object. Its primary advantage is that human operators do not need to use measurement tools. The projector and the 3D sensor are on a moveable tripod to not interfere with the operator's field of view. The system has several modules, which include computer vision software for performing the hardware calibration in the setup phase, while relying on a GUI during the deployment phase for providing an intuitive interface for the operator to quickly load new CAD models, trigger the 3D perception module and project task-oriented information into the environment for marking and cutting operations.

Applications

The system provides an immersive Human-Machine Interface for helping human operators perform their tasks, such as marking, and cutting, assembly of supply modules in outfitting, among others. This immersive interface enables the direct transmission of the design specifications into the environment, and as such, allows the human operators to perform these tasks faster, more accurately and with fewer mistakes, without relying on error-prone measuring devices and printed documents.