Motivation

Augmented Reality (AR) is a user interface metaphor, which allows for interweaving digital data with physical spaces. AR relies on the concept of overlaying digital data onto the physical world, typically in form of graphical augmentations in real-time. Augmented Reality (AR) techniques are applied in different domains (engineering, entertainment or education & training) and provide a cognitive assistance for various activities (maintenance, programming, configuration etc.). Especially in the context of robot programming, AR provides several advantages in the programming process. The operator gets instant real-time, visual feedback of a simulated process in relation to the real object, resulting in reduced programming time and increased quality of the resulting robot program.

Main goal of this thesis is to design and implement an augmented reality assisted robot programming environment. The robot programming environment shall focus on the Dobot Magician system (see Fig. 1) which can be represented as a 3D Model (see Fig. 3) and projected via AR techniques in the working environment (see Fig. 2) to support the programming task of an operator.

Task

- Literature research on the topics AR and Robot Programming
- Conception and Design of an AR Assisted Robot Programming Environment
- Prototypical Implementation of an AR Assisted Programming Environment for the Dobot Magician System
- Experiment-based evaluation of the implemented approach

Based on your interests and skills we can flexibly concretize the required task-set (for a Bachelor or Master thesis).

Feel free to contact us!