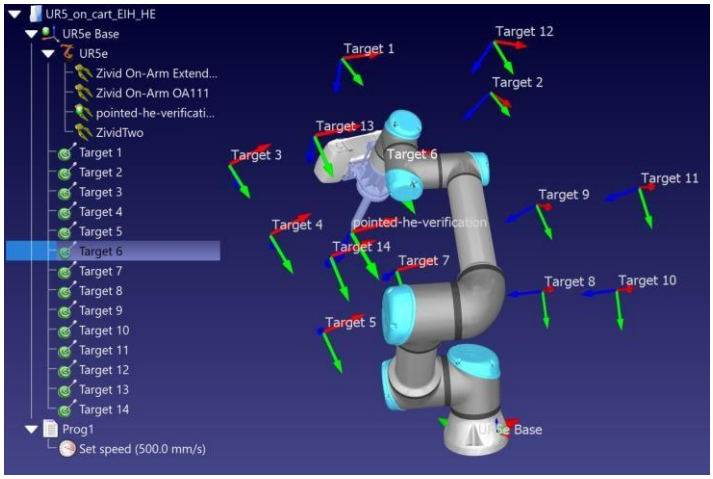
Robotic Automation

Course Duration: 30 hrs

Course Objectives:

- Gain a comprehensive understanding of robotics fundamentals and applications.
- Differentiate between offline and online robot programming approaches.
- Master the ROBO DK software environment and its advanced features.
- Design and implement effective robot simulations and programming strategies.
- Apply ROBO DK to solve real-world industrial robotics challenges.

Course Outline:



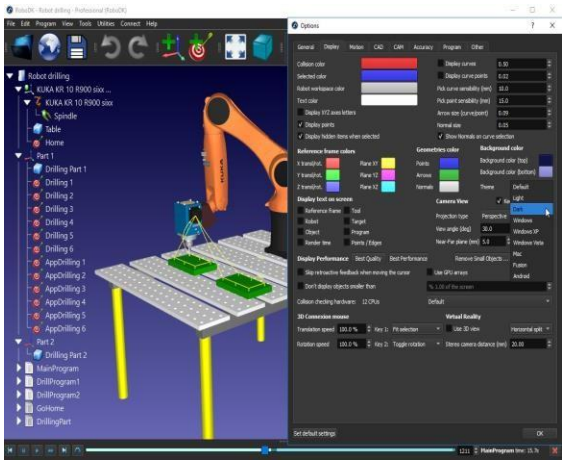
Introduction to Robo DK

- **Overview of Robo DK**
  - What is Robo DK?
  - Applications and benefits of Robo DK
  - System requirements and installation
- **User Interface and Navigation**
  - Exploring the Robo DK interface
  - Understanding the main components and their functions
  - Navigating through the software effectively

Robot Modeling and Simulation

- **Fundamentals of Robot Modeling**
  - Concepts of robot representation in Robo DK
  - Creating robot models from scratch
  - Importing robot models from CAD files

- **Simulating Robot Motion and Interactions**



    - Setting up simulation environments
    - Simulating robot motion and interactions with objects
    - Analyzing and debugging simulation results

Programming with Robo DK

- **Introduction to Robo DK Programming**
    - Programming languages and tools supported by Robo DK Basic programming concepts and syntax.
    - Writing simple RoboDK programs
- **Programming Robot Motion and Interactions**
    - Programming robot movement trajectories
    - Controlling robot joints and actuators.
    - Programming robot interactions with sensors and external devices

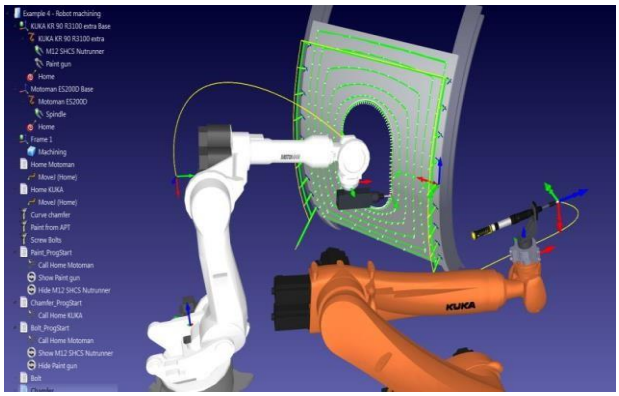
Advanced Topics in Robo DK

- **Error Handling and Debugging**
    - Identifying and troubleshooting errors in Robo DK programs
    - Using debugging tools to locate and fix errors.
    - Implementing error-handling techniques
- **Integration of Sensors and External Devices**
    - Understanding sensor types and data acquisition
    - Integrating sensors into Robo DK simulations
    - Communicating with external devices using Robo DK

Deployment and Application

- **Preparing Robo DK Projects for Deployment**

    - Organizing and optimizing Robo DK projects
    - Ensuring project compatibility with different environments
    - Packaging and distributing Robo DK projects



- **Applications of Robo DK in Various Fields**

    - Robo DK in robotics research and development
    - Robo DK in industrial automation and manufacturing
    - Robo DK in education and training