

# CONTROL SYSTEM FOR COLLABORATIVE ROBOT

Datasheet

**PROVIDING SOLUTIONS FOR TOMORROW - SINCE 1993** 



### **Project objective**

Develop a Proof of Concept application for controlling a collaborative robot (cobot) from a specialized computer, demonstrating its ability to perform assembly defect detection within a factory production environment. The app was to provide intuitive interface for technician staff to easily configure the cobot and manage the inspection process.







### Result

The PoC app enables simple management of a collaborative robot equipped with an array of cameras and lights for engine assembly defect detection, configuring of up to 64 engine types and up to 32 inspection points per engine type. It required minimal online training for technical personnel to ensure effective use in a production line environment. The team can freely control the robot from the control computer, move it to the defined image capture points according to the selected plans, and manage the machine vision system.

#### Scope of work

- Creation of storyboards for HMI, user workflows, interface screens, and description of user interactions with the robot;
- Robot control software design and implementation on the control computer. Kinematic model implementation, movement visualization, planning and inspection fucntionality;
- Oamera control integration into the control computer software;
- Vision system interaction implementation to manage image analysis process;
- Oustomization of an industrial-grade enclosure with the control computer inside to operate the robot from it.

#### Activities

- Functional requirements definition
- System architecture and design
- HMI design and development
- Hardware procurement and assembly
- Control software development
- Oeployment and testing in a production environment



## About the project

#### **Technologies**

- ♦ C/C++
- Qt, Qt 3D visualization
- Python
- JSON, TCP/IP, XML-RPC, SQLite
- Robot simulator
- 🚸 Git



#### **Project size**

- 1 Business Analyst
- 3 Software Engineers
- 1 Hardware Engineer
- I Graphics Designer

#### Platforms

- Windows
- 🚸 Linux

Duration

