Development of a CANopen ServiceTool

for Diagnosis and Configuration of Platform Modules

Graduate

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Introduction: This bachelor thesis was created in collaboration with the company Oertli Instrumente AG in Berneck. The company Oertli Instrumente AG is currently in development of new eye surgery devices. The task included the design and implementation of a CANopen service tool for the new generation using the CANopen Python library. The service tool is intended to ensure seamless diagnosis and configuration of the individual platform modules. The motivation of this work is based on the need for advanced solutions in the field of medical technology, especially in eye surgery.

Approach: During the development of the service tool a particular focus was placed on a user-friendly GUI creation, effective CANopen communication and structured management of the module data. Great attention was devoted to establish a CANopen connection, scanning and presenting the nodes, as well as monitoring and controlling the data modules.

Result: The results show that the service tool was created successfully. The usability tests enabled further developments and improvements, thus confirming the efficiency and user-friendliness. The service tool is a valuable opportunity to efficiently test and maintain the new generation of devices. The service tool ensures perfect CANopen communication with the modules. By querying SDO and PDO data, current process and service values of the respective module can be displayed. By implementing a calibration mode, current data can be manipulated via SDO. A backup of the configuration of a module can also be created so that the adjustment can be transferred from one module to another. The tool was developed to ensure its maintainability. For this purpose, a precisely defined and documented software architecture was designed, accompanied by comprehensive documentation of the software, which allows further developments.
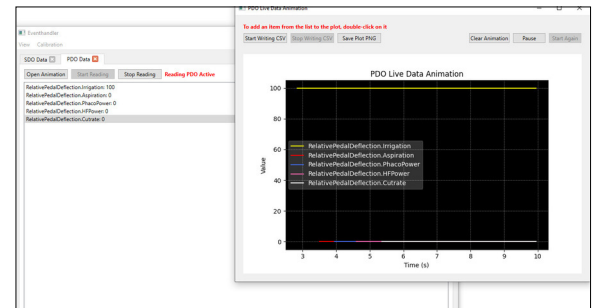
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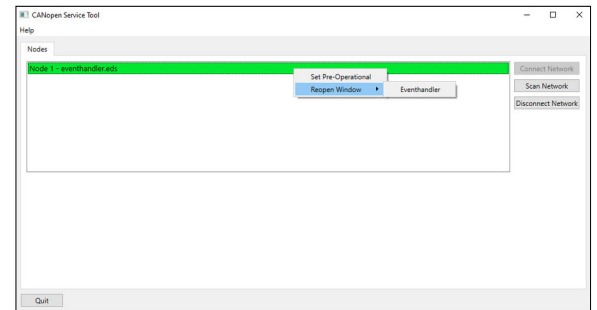
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