

Proposal for graduation project (2025-2026)

Project Title: Smart Automation for Industrial Process Control and Monitoring

Supervisor(s)

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Abstract:

This project proposes the design and development of an intelligent process control system that integrates electric drives along with Programmable Logic Controllers (PLCs), Supervisory Control and Data Acquisition (SCADA) systems, and Artificial Intelligence (AI) to enhance industrial processes automation. The system will utilize electric drives for motor control, PLCs for real-time control, SCADA for monitoring and data acquisition, AI for predictive analytics and process optimization. The project aims to demonstrate the potential of this integrated system in improving process efficiency, reducing downtime, and increasing productivity in various industrial applications.

Project details.

The aim of this project is to design, develop, and test an intelligent process control system that combines the strengths of PLCs, SCADA systems, AI, and electric drives. The project will include:

- Design and development of a PLC-based control system for real-time control of industrial processes.
- Development of a SCADA system, integrating reliable communication infrastructure, for real-time monitoring, visualization and alarm management.
- Integration of AI algorithms for predictive analytics and process optimization, including anomaly detection and fault diagnosis.
- Design and implementation of electric drive systems for precise motor control, including speed and torque control.
- Testing and validation of the system in a simulated industrial process, with evaluation of system performance and efficiency.

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