

Master Thesis work in Formal Verification

Title: Formal verification of ABB robotic system

Project Description:

Formal verification is a tool to verify the logic of a code and make sure that it works in accordance with specification in every situation. To contrast, traditional test-based quality assurance has the disadvantage that it is impossible to test for every single input, series of input and outside conditions in open autonomous systems. This project will use model checking as a tool to formally verify certain properties of a safety critical component of ABB Paint Robots.

Upon screening and review of related literature, the proposed master thesis project will focus and dig further into one example industrial use case, namely formal verification of certain properties of the safety control of ABB Robotic system.

The project will be conducted in collaboration with UiA, ABB and the “[Assuring Autonomy International Program](#)” at University of York. In particular [ABB RobotStudio](#) and/or [RoboTool](#) SW developed at Univ. of York will be combined and used for modelling, simulating and the formal verification process.



Project requirements:

The proposed project should consist of the following subtasks:

1. Screening of background and related literature.
2. Understanding of the industrial use case and properties.
3. Necessary modelling and simulation using [RoboTool](#) and [ABB RobotStudio](#)
4. Documentation and final reporting

The main expected outcome from the project includes description and further development of methodology and tools for performing formal verification of one or more realistic use cases from the industry.

Additional information:

For more information or questions, please contact:

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