Master's thesis proposal – 30hp

Cloud Based Virtual PLC

About Project Smarta Fabriker: Digitalization and its connection to sustainable production is identified as a key enabler for increasing the number of jobs in Swedish industry. The purpose of Project Smarta Fabriker is to increase the attractiveness of technology and careers in industrial companies, and to spread knowledge about industrial digitalization. During the spring of 2017 a state-of-the-art demonstrator of a smart factory was developed by 80 students in collaboration with over 50 companies. The demonstrator is currently used for training students as well as employees of industrial companies. For 2018 this demonstrator is to be further developed implementing a variety of digital manufacturing concepts where Cloud Based Virtual PLC is one of the central themes. To learn more about the project and previous theses, visit www.smartafabriker.se (in Swedish).

Cloud Based Virtual PLC is replacing the traditional PLC with a virtual PLC in the cloud and replacing the physical wired communication over field busses and to I/O-nodes with wireless technology.

As next step is to investigate if it is possible to create new soft bindings between logical variables and physical I/O-addresses with a “DNS” like structure.

Tasks

- Implement cloud based technology
- Implement and evaluate a distributed virtual PLC in the cloud
- Evaluate and prototype the cloud security model of the virtual PLC
- Integration in radio network
- Develop hardware prototype of mobile fieldbus

Means and location

This thesis is performed in collaboration with Ericsson and ABB which will provide industrial support and supervision. Thesis students will have access to workplaces at Ericsson.

Conduction and requirements

This thesis work needs to be conducted by two students where at least one should be fluent in Swedish. Preferably, we are looking for students with background in “Systems, control and mechatronics” or “Communication Engineering”. The time period is January to May 2018.

Contact

For questions concerning Project Smarta Fabriker contact Project Manager Johan Bengtsson, 0708 58 19 68, johan.bengtsson@qtc.com. For specific questions concerning the topic of the thesis, fredrik.flyrin@ericsson.com, 0709 875535 or magnus.seger@se.abb.com, 0703 661566

Interviews are held continuously. To apply, send your CV and a cover letter to fredrik.flyrin@ericsson.com as soon as possible, but no later than November 30th, 2017.