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KING MONGKUT'S UNIVERSITY OF TECHNOLOGY NORTH BANGKOK

Rayong Campus

The 1st online International Workshop

On 14th May 2021 and 21st May 2021

Registration form: *https://forms.gle/2VZco64GyYnvDXwj9*

Video conference tool: Zoom

Link: *https://zoom.us/j/9442576197*

Agenda

DAY 1: Friday, 14th of May, 2021

Time (CET)	Task description	Responsible
9:00-9:15	Welcome/Registration	All participants (Moderator) S.Kumpakeaw
9:15-9:45	PROFINET Basics and Engineering (1)	R. Langmann (Assist.) S.Kumpakeaw
9:45-10:30	PROFINET Basics and Engineering (2)	R. Langmann (Assist.) S.Kumpakeaw
10:30-11:00	Coffee break	
11:00-12:00	PROFINET Basics and Engineering (3)	R. Langmann (Assist.) S.Kumpakeaw
12:00-12:30	Q & A	S.Kumpakeaw

DAY 2: Friday, 21st of May, 2021

Time (CET)	Task description	Responsible
9:00-9:15	Welcome/Registration	All participants (Moderator) S.Kumpakeaw
9:15-9:45	Introduction to IEC 61131-3	S. Kumpakeaw
9:45-10:30	Learning the IEC 61131-3 programming at low-cost	S. Kumpakeaw
10:30-11:00	Coffee break	
11:00-12:00	Use of a DIY SCARA Robot in Education – an Example	E. Smet et al.
12:00-12:30	Q & A	S. Kumpakeaw

Contact persons:

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Topics of the 1st International Workshop

(online with Zoom - *https://zoom.us/j/9442576197***)**

Friday 14th, May 2021	Topics (Speaker) and Description
	**PROFINET Basics and Engineering** *(Prof. Dr.-Ing. R. Langmann – CCAD)* The lesson deals with an introduction in the communication system PROFINET in two parts: Part A: Basics: 1 What is PROFINET? 2 Profinet vs. Profibus 3 ISO/OSI Reference Model 4 Ethernet Basics 5 Cables and Connectors 6 Internet Protocol Family Part B: Engineering 1 Profinet IO 2 Profinet CBA
Friday 21th, May 2021	**Topics (Speaker) and Description**
	**Learning IEC 61131-3 at low-cost?** *(Dipl.-Ing. S. Kumpakeaw – KMUTNB)* Learning the IEC 61131-3 is rather expensive for beginners. Hardware cost (e.g. PLCs) and peripherals cost (e.g. sensors and actuators in industrial grade) are summative high. This might scare beginners just like high school students, vocational technician, or hobby enthusiast to learn this industrial standard programming. Even if they could afford the hardware, it's not guarantee that they will love it and prefer it in their professional way further. It's wasted investment. Another concept to introduce about IEC 61131-3 programming and persuade all enthusiasts in massive way, is to deploy the open source software and hardware. This workshop shows some examples of open source software dealing with 3 major IEC 61131-3 languages (Ladder, FB, ST), which can communicate and transfer the executed program to open source and low-cost hardware just like Arduino modules. Extendable the possibility to simulate with open source SCADA software also be demonstrated. With this didactic method can save cost, both teacher's side in classroom and learner's side at home. A lot of learners at the same time in classroom is possible.
 	**Use of a DIY SCARA Robot in Education – an Example** *(Prof. Ing. E. Smet MSc., Dr. Ir. C. Copot, Prof. Dr. S. Vanlanduit, E. Cardenas BSc., UAntwerp)* This presentation shows how a DIY SCARA robot ("Do It Yourself", "Selective Compliance Assembly Robot Arm") can be used in education in the scope of Industry 4.0. A general description and an overview of the characteristics of a SCARA robot are given. The mechanical and electrical structure of this easy to build arm is discussed. The arm consists of parts that can be 3D-printed and some low-cost standard parts (motors, axes, etc.). The forward and inverse kinematics of the arm are explained. The connection with a vison system is also part of the presentation.