Summer/Winter School on Industrial Software Engineering for Robotics and Internet of Things

Saint Petersburg Electrotechnical University "LETI"

Degree or qualification is awarded: **standard certificate**

Language of study: **English**
Mode of study: **full-time**
Duration: **2 weeks**
Availability of free education: **yes**
Price: **30 000 rubles**

Programme webpage at the university website:
https://etu.ru/en/study/winter-and-summer-schools/industrial-software-engineering-for-robotics-and-internet-of-things

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The goal of the program is providing participants intensive courses for getting essential skill for software engineering in emerging domains like Internet of Things, Robotics, Smart Environments.

Modules

Module 1 - Introduction to Embedded Programming for Microcontrollers
Course provides knowledge which would be required for programming robots and Internet-of-Things devices.

Annotation: We live in a fast-growing world. Many devices, from simple irons and kettles till industrial controllers and IoTs (internet of things), run with the help of microcontrollers (MCU). Microcontroller is a small computer on a single integrated circuit containing a processor core, memory, and programmable input/output peripherals. This course gives students brief introduction to embedded software development. It provides basics of MCUs and development platforms and teaches how to create firmware for MCUs. Special focus will be on Methods of interacting with real world, many sensors and working with integrated hardware and communication interfaces. The specifics of software development in situation when one has small memory, low computational power and other things specific to embedded platforms are also described.

Module 2 - Introduction to Linux Programming
Course provides essential knowledge about building, configuring and using linux for embedded devices and elementary skills for linux development

Annotation: Linux is the de-facto standard for most of household and industrial appliances. It is running on routers, mobile phones, tablets, TV sets, robots and mane devices around us. Programming with Linux is the most powerful and promising skill for the future world. In this course students will acquire basic knowledge about Linux kernel architecture, using it in embedded devices and small computers (like Raspberry Pi). This knowledge will allow to create projects in IoT and robotics.

Module 3 - Introduction to Robot Operating System (ROS)
Course provides essential skills for mobile robot behavior programming and

Annotation: Robot Operating System is an open-source, meta-operating system for your robotic platform. It provides services you would expect from an operating system, including hardware abstraction, low-level device control, implementation of commonly-used functionality, message-passing between processes, and package management. It also provides tools and libraries for obtaining, building, writing, and running code across multiple computer units. In this track special focus will be on basic ROS programming and developing algorithms for mobile robot navigation, localization and map building.

Specializations within this programme