

Compact Python for Embedded

Online Live

Workshop

| Applicable Technologies | Requirements | Contact |
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| Python, PYNQ | Basic knowledge on OOP | Michael Schwarz P. +49 7664 91313-15 E. info@plc2.de |
| Fee (net per person) | Inclusive | Duration |
| OL € 1,900 | Training material | 3 days |
| WO € 2,300 | Plus beverages during breaks Lunch | 3 days |

Workshop

Within the embedded computing sphere, the programming language C has long been considered the standard. However, more complex applications and faster time to market requirements call for alternatives.

Traditionally used for web and desktop applications, Python offers such an alternative, thanks to its support for C/C++ libraries and the provision of frameworks for processing complex algorithms. Those associated frameworks enable the development of complex algorithms used across data analytics, Machine Learning (ML), and Artificial Intelligence (AI) applications. Of course, these applications are hot topics within embedded computing and are driving the adoption of Python, especially within the Industrial Internet of Things (IIoT) at the edge.

Xilinx® offers an open source framework (PYNQ) that allows Python to interact with the Zynq® portfolio. This is realized by hybrid libraries, which is a new form of libraries. Such a hybrid library includes both a bitstream and the associated hardware-related C code, but also an Application Programming Interface (API) for Python. In this course, you will learn the basics of programming with Python, which you will use in a workshop. You will then be able to develop prototypes based on Python on embedded systems in a short time.

Due to accompanying exercises, the course offers in-depth and practice-oriented training. Attendees of the online live course will do the practical exercises in the afternoon on their own.

Agenda

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| <p>01. Introduction Environment setup Reasons to use Python The use of Jupyter</p> <p>02. Development with Python Variables Types, I/O, and import Operators and namespace Datatypes</p> <p>03. Flow control Statements Loops</p> <p>04. Functions Function and argument Recursion Modules and packages</p> | <p>05. Objects and classes OOP Inheritance</p> <p>06. Embedded hardware PYNQ architecture Board setup</p> <p>07. Libraries CTypes</p> <p>08. Workshop - applications GPIO app</p> <p>09. FPGA Creation of a custom overlay (Vivado®)</p> |
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