W06 2nd International Workshop on Embedded Software for the Industrial IoT (ESIIT 2019)

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2nd International Workshop on Embedded Software for the Industrial IoT (ESIIT 2019)
Session Type: Workshop
Date: Friday, March 29, 2019
Time: 08:45-16:15
Location / Room: Room 6
URL: Homepage [1]
Call for Papers [2]
Final Programme [3]

Organisers

Oliver Bringmann, University of Tuebingen / FZI, DE (Contact Oliver Bringmann [4])
Wolfgang Ecker, Infineon Technologies, DE (Contact Wolfgang Ecker [5])
Wolfgang Müller, Universität Paderborn, DE (Contact Wolfgang Müller [6])
Daniel Müller-Gritschneder, Technische Universität München, DE (Contact Daniel Müller-Gritschneder [7])

Motivation and Objectives

The Internet-of-things (IoT) is emerging as the backbone for industrial automation. The tremendous impact of IoT to industrial applications is a key reason for IoT research and developments to grow dramatically in importance and economic impact for the next decade. At the edge of the IoT, ultra-thin devices with extremely small software memory footprints need to be cheap and capable to run with extremely small amounts of energy support over a very long lifetime. At the same time, IoT software must provide smart functions including real-time computing capabilities, connectivity, security, safety, and remote update mechanisms. These constraints put a high pressure on IoT software development based on the specific properties of IoT devices.

The ESIIT 2019 joint academic/industry workshop will focus on software development and maintenance of IoT devices addressing the very limited resources and power dissipation of IoT edge nodes in the context of a very long life cycle in an operational IoT network. This covers issues like software synthesis, configurability, safety, security, upgrades, fault recovery, maintenance as well as constraints and opportunities from newly emerging IoT hardware platforms. The workshop intends to provide an open platform for exchange and communication on new directions and requirements to academia and industry. We plan to especially give industrial speakers and leading research experts a platform to present the requirements and most recent results in today's and future industrial IoT-constrained software development and maintenance. The main objectives are:

- to invite industrial experts to present current and future needs and requirements
- to present and discuss novel technologies and ideas from different research areas and domains
- to explore and align trends and future needs for IoT platform development and maintenance from the perspective of academia and industry.

Highlights

ESIIT 2019 will feature a range academic talks with poster presentation as well as 3 invited industrial presentations.

- Invited talk from Michael Velten **(Infineon Technologies AG))**
  Title: *Proposals for IP-XACT Extensions from Embedded Controller Use Cases*
- Invited talk from Aljoscha Kirchner **(Robert Bosch GmbH)**
  Title: *Automation of Embedded Software Development for Smart Sensor ASICs*
- Invited talk from Thomas Kuhn (**Fraunhofer IESE)**
  Title: *BaSys 4.0: An Open Source Middle for the Industrial Internet of Things*

Registration

ESIIT Workshop is a **DATE 2019** Friday Workshop (Friday Workshop W06). Workshop registration is still possible onsite.

Workshop Presentations can be downloaded here [8].

Tentative Workshop Proceedings can be downloaded here [9].

Agenda

Time	Label	Session
07:30	W06.1	**Registration Desk opens**
08:45	W06.2	**Opening**
09:00	W06.3	**Session I: Invited Industrial Session**
09:00	W06.3.1	**Proposals for IP-XACT Extensions from Embedded Controller Use Cases** Michael Velten and Wolfgang Ecker, Infineon Technologies, DE
09:30	W06.3.2	**Automation of Embedded Software Development for Smart Sensor ASICs** Aljoscha Kirchner[1], Jan-Hendrik Oetjens[1] and Oliver Bringmann[2] [1]Robert Bosch GmbH, DE; [2]Universität Tübingen, DE
10:00	W06.4	**Break: Refreshments & Poster Discussions**
10:30	W06.5	**Session II: Applications for the IOT**
10:30	W06.5.1	**An Experimental Platform for Cooperative Work with Context-Oriented Programming and Hardware Reconfiguration for Industry IoT** Harumi Watanabe[1], Mikiko Sato[1], Ikuta Tanigawa[2], Mariya Kawamura[1], Nobuhiko Ogura[3] and Takeshi Ohkawa[4] [1]Tokai University, JP; [2]Kyushu University, JP; [3]Tokyo City University, JP; [4]Utsunomiya University, JP

10:45	W06.5.2	**Inertial Sensor Based Robot Gesture Detection for Safe Human-Robot Interaction** Johann-Peter Wolff[1], Christian Haubelt[1], Rolf Schmedes[2] and Kim Grüttner[2] [1]University of Rostock, DE; [2]OFFIS - Institut für Informatik, DE
11:00	W06.5.3	**An Open-Source, IoT-Tailored Face Detection Software** Panagiotis Kalodimas[1], Antonis Nikitakis[1] and Ioannis Papaefstathiou[2] [1]Technical University of Crete, GR; [2]Aristotle University of Thessaloniki, GR
11:15	W06.5.4	**Component-based FPGA Development of Intelligent Image Processing for Industrial IoT Devices** Kenta Arai, Takeshi Ohkawa, Kanemitsu Ootsu and Takashi Yokota, Utsunomiya University, JP
11:30	W06.6	**Session III: Invited Industrial Presentations**
11:30	W06.6.1	**BaSys 4.0: An Open-Source Middleware for the Industrial Internet of Things** Frank Schnicke, Markus Damm and Thomas Kuhn, Fraunhofer IESE, DE
12:00	W06.7	**Break: Lunch & Poster Discussions**
13:00	W06.8	**Session IV: Safety, Security, Performance and Power Optimizations & Analysis for the IoT**
13:00	W06.8.1	**Firmware-Driven Optimization of the Hardware/Software Interface for IoT Nodes** Rafael Stahl, Daniel Müller-Gritschneder and Ulf Schlichtmann, TUM, DE
13:15	W06.8.2	**A Heuristic for Multi Objective Software Application Mappings on Heterogeneous MPSoCs** Gereon Führ[1], Ahmed Hallawa[1], Rainer Leupers[1], Gerd Ascheid[1] and Awaid-Ud-Din Shaheen[2] [1]RWTH Aachen, DE; [2]Silexica GmbH, DE
13:30	W06.8.3	**Source-level Power Simulation of IoT Firmware for Energy Evaluation** Michael Kuhn and Oliver Bringmann, Universität Tübingen, DE
13:45	W06.8.4	**Towards Distributed Runtime Monitoring with C++ Contracts** Rolf Schmedes and Philipp Ittershagen, OFFIS - Institut für Informatik, DE
14:00	W06.8.5	**Security Chain Tool for IoT Secure Applications** Christoph Schmittner and Abdelkader Magdy Shaaban, Austrian Institute of Technology, AT
14:15	W06.8.6	**QEMU for Dynamic Memory Analysis of Security Sensitive Software** Peer Adelt[1], Bastian Koppelmann[1], Wolfgang Müller[1], Christoph Scheytt[1] and Benedikt Driessen[2] [1]Heinz Nixdorf Institute, DE; [2]Kasper & Oswald GmbH, DE
14:30	W06.9	**Break: Refreshments & Poster Discussions**
15:00	W06.10	**Session V: Model Based Frameworks for IoT Software Development**
15:00	W06.10.1	**A Syntax Oriented Code Generation Approach for SoC Design Automation** Michael Werner, Andreas Neumeier and Wolfgang Ecker, Infineon Technologies, DE
15:15	W06.10.2	**Ecosystem for Agile Design of Future-Proof RISC-V Based IoT-Devices** Leon Hielscher[1], Frederik Haxel[1], Arthur Kühlwein[1], Sebastian Reiter[1], Alexander Viehl[1], Oliver Bringmann[1] and Wolfgang Rosenstiel[2] [1]FZI Forschungszentrum Informatik, DE; [2]University of Tübingen, DE
15:30	W06.10.3	**Towards Stateflow Model-Aware Debugging Using Model-to-Source Tags with LLDB** Bewoayia Kebianyor, Philipp Ittershagen and Kim Grüttner, OFFIS - Institut für Informatik, DE
15:45	W06.10.4	**Tackling the Challenges of Internet-of-Things-Development Using Models** Rupert Schlick and Willibald Krenn, Austrian Institute of Technology, AT
16:00	W06.11	**Plenary Discussions & Closing**
16:15	W06.12	**End of Workshop**

Links:

[1] https://www.edacentrum.de/en/esiit
[2] https://www.edacentrum.de/system/files/images/ESIIT-Workshop/2019/ESIIT2019_CFP.pdf
[3] http://adt.cs.upb.de/ESIIT_program_2019.pdf
[4] https://past.date-conference.com/user/21550/contact_form
[5] https://past.date-conference.com/user/2351/contact_form
[6] https://past.date-conference.com/user/217/contact_form
[7] https://past.date-conference.com/user/25321/contact_form
[8] http://adt.cs.upb.de/ESIIT2019-presentations.pdf
[9] http://adt.cs.upb.de/ESIIT2019-tproceedings.pdf