



# International Workshop on Embedded Software for the Industrial IOT

March 29<sup>th</sup> 2019, Firenze Fiera, Florence, Italy



**General Co-Chairs:** Oliver Bringmann (Eberhard Karls Universität Tübingen, Germany)  
Wolfgang Ecker (Infineon Technology, Germany)  
Wolfgang Müller (Heinz Nixdorf Institute, Germany)  
Daniel Müller-Gritschneider (Technical University of Munich, Germany)

## *Final Program*

### 08:45 Opening

#### Session I: Invited Industrial Session

09:00 Proposals for IP-XACT Extensions from Embedded Controller Use Cases

M. Velten, W. Ecker (Infineon Technologies AG, DE)

09:30 Automation of Embedded Software Development for Smart Sensor ASICs

A. Kirchner<sup>1</sup>, J.H. Oetjens<sup>1</sup>, O. Bringmann<sup>2</sup> (<sup>1</sup>Robert Bosch GmbH, <sup>2</sup>U Tübingen, DE)

### 10:00 Break: Refreshments & Poster Discussions

#### Session II: Applications for the IoT

10:30 An Experimental Platform for Cooperative Work with Context-Oriented Programming and Hardware Reconfiguration for Industry IoT. H. Watanabe<sup>1</sup>, M. Sato<sup>1</sup>, I. Tanigawa<sup>2</sup>, M. Kawamura<sup>1</sup>, N. Ogura<sup>3</sup>, T. Ohkawa<sup>4</sup>

(<sup>1</sup>U Tokai, <sup>2</sup>U Kyushu, <sup>3</sup>U Tokyo City, <sup>4</sup>U Utsunomiya, JP)

10:45 Inertial Sensor Based Robot Gesture Detection for Safe Human-Robot Interaction

J.P. Wolff<sup>1</sup>, Chr. Haubelt<sup>1</sup>, R. Schmedes<sup>2</sup>, K. Grüttner<sup>2</sup> (<sup>1</sup>U Rostock, <sup>2</sup>OFFIS, DE)

11:00 An Open-Source, IoT-Tailored Face Detection Software

P. Kalodimas<sup>1</sup>, A. Nikitakis<sup>1</sup>, I. Papaefstathiou<sup>2</sup> (<sup>1</sup>TU Crete, <sup>2</sup>U Thessaloniki, GR)

11:15 Component-based FPGA Development of Intelligent Image Processing for Industrial IoT Devices

K. Arai, T. Ohkawa, K. Ootsu, T. Yokota (U Utsunomiya, JP)

#### Session III: Invited Industrial Session

11:30 BaSys 4.0: An Open-Source Middleware for the Industrial Internet of Things

L.F. Schnicke, M. Damm, Th. Kuhn (Fraunhofer IESE, DE)

### 12:00 Break: Lunch & Poster Discussions

#### Session IV: Safety, Security, Performance and Power Optimizations & Analysis for the IoT

13:00 Firmware-Driven Optimization of the Hardware/Software Interface for IoT Nodes

R. Stahl, D. Müller-Gritschneider, U. Schlichtmann (TU Munich, DE)

13:15 A Heuristic for Multi Objective Software Application Mappings on Heterogeneous MPSoCs

G. Onnebrink<sup>1</sup>, A. Hallawa<sup>1</sup>, R. Leupers<sup>1</sup>, G. Ascheid<sup>1</sup>, A.U.D. Shaheen<sup>2</sup> (<sup>1</sup>RWTH Aachen, <sup>2</sup>Silexica GmbH, DE)

13:30 Source-level Power Simulation of IoT Firmware for Energy Evaluation

M. Kuhn, O. Bringmann (U Tübingen, DE)

13:45 Towards Distributed Runtime Monitoring with C++ Contracts

R. Schmedes, Ph.Ittershagen, K. Grüttner (OFFIS, DE)

14:00 Security Chain Tool for IoT Secure Applications

Chr. Schmittner, A.M. Shaaban (AIT - Austrian Institute of Technology, AT)

14:15 QEMU for Dynamic Memory Analysis of Security Sensitive Software

P. Adelt<sup>1</sup>, B. Koppelman<sup>1</sup>, W. Mueller<sup>1</sup>, Chr. Scheytt<sup>1</sup>, B. Driessen<sup>2</sup> (<sup>1</sup>U Paderborn, <sup>2</sup>Kasper & Oswald GmbH, DE)

### 14:30 Break: Refreshments & Poster Discussions

#### Session V: Model Based Frameworks for IoT Software Development

15:00 A Syntax Oriented Code Generation Approach for SoC Design Automation

M. Werner<sup>1,2</sup>, A. Neumeier<sup>1</sup>, W. Ecker<sup>1,2</sup> (<sup>1</sup>Infineon Technologies AG, <sup>2</sup>TU Munich, DE)

15:15 Ecosystem for Agile Design of Future-Proof RISC-V Based IoT-Devices

L.Hielscher<sup>1</sup>, F.Haxel<sup>1</sup>, A.Kühlwein<sup>1</sup>, S.Reiter<sup>1</sup>, A. Viehl<sup>2</sup>, O.Bringmann<sup>2</sup>, W.Rosenstiel<sup>2</sup> (<sup>1</sup>FZI, <sup>2</sup>U Tübingen, DE)

15:30 Towards Stateflow Model-Aware Debugging Using Model-to-Source Tags with LLDB

B. Kebianyor, Ph.Ittershagen, K. Grüttner (OFFIS - Institut für Informatik, DE)

15:45 Tackling the Challenges of Internet-of-Things-Development Using Models

R.Schlick, W.Krenn (AIT - Austrian Institute of Technology, AT)

### 16:00 Discussions & Closing

16:15 End