

# INFORMATION TECHNOLOGY

METHODS AND APPLICATIONS OF INFORMATICS AND  
INFORMATION TECHNOLOGY

## **EDITORS-IN-CHIEF**

*Stefan Conrad, Düsseldorf*

## **EDITORIAL BOARD**

*Heinrich Arnold, Berlin*

*Andreas Butz, München*

*Görschwin Fey, Hamburg*

*Ulrich Flegel, München*

*Andreas Herkersdorf, München*

*Anne Koziolok, Karlsruhe*

*Richard Lenz, Erlangen-Nürnberg*

*Ronald Maier, Innsbruck*

*Paul Molitor, Halle*

*Paul Müller, Kaiserslautern*

*Mareike Schoop, Stuttgart*

*Falk Schreiber, Konstanz*

## **HONORARY EDITOR**

*Heinz Zemanek<sup>†</sup>, Wien*

**DE GRUYTER  
OLDENBOURG**

**it – Information Technology** is a strictly peer-reviewed scientific journal. It is the oldest German journal in the field of information technology. Today, the major aim of **it – Information Technology** is highlighting issues on ongoing newsworthy areas in information technology and informatics and their application. It aims at presenting the topics with a holistic view. It addresses scientists, graduate students, and experts in industrial research and development.

**it – Information Technology** is the organ of the faculties Technical Informatics and Computer Science in the Life Sciences of the German Informatics Society (GI – Gesellschaft für Informatik e.V.) and faculty Technical Informatics of the Information Technology Society (ITG) within the VDE (Verband der Elektrotechnik, Elektronik und Informationstechnik e.V.).

**it – Information Technology** was founded as **Elektronische Rechenanlagen** in 1959. To live up to the changes in the scientific and technological world it changed its name and shape several times. In 1986 it became **it – Informationstechnik** and **it+ti – Informationstechnik und Technische Informatik** in 1993. In 2002, the journal got the current name **it – Information Technology**.

**ABSTRACTED/INDEXED IN** ACM Digital Library · Baidu Scholar · Cabell's Directory · CNKI Scholar (China National Knowledge Infrastructure) · CNPIEC: cnpLINKer · DBLP Computer Science Bibliography · Dimensions · EBSCO (relevant databases) · EBSCO Discovery Service · Engineering Village · Genamics JournalSeek · Google Scholar · Inspec · Japan Science and Technology Agency (JST) · J-Gate · JournalGuide · JournalTOCs · KESLI-NDSL (Korean National Discovery for Science Leaders) · Microsoft Academic · MyScienceWork · Naviga (Softweco) · Primo Central (ExLibris) · Publons · QOAM (Quality Open Access Market) · ReadCube · SCImago (SJR) · SCOPUS · Semantic Scholar · Summon (ProQuest) · TDNet · TEMA Technik und Management · Ulrich's Periodicals Directory/ulrichsweb · WanFang Data · Web of Science: Emerging Sources Citation Index · WorldCat (OCLC)

ISSN 1611-2776 · e-ISSN 2196-7032

All information regarding notes for contributors, subscriptions, Open Access, back volumes and orders is available online at:  
<http://www.degruyter.com/itit>

For receiving a TOC alert subscribe at [www.degruyter.com/newsletter](http://www.degruyter.com/newsletter).

Editor and publisher thank all authors for their engagement. Papers and discussions are always welcome. For the submission of your paper please use our online portal: [www.editorialmanager.com/itit](http://www.editorialmanager.com/itit).

**JOURNAL MANAGER** Holger Kleessen, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05-348, Fax: +49 (0)30 260 05-184, E-mail: [ITIT.Editorial@degruyter.com](mailto:ITIT.Editorial@degruyter.com)

**RESPONSIBLE FOR ADVERTISEMENTS** Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0)30 260 05-226, Fax: +49 (0)30 260 05-264, E-mail: [anzeigen@degruyter.com](mailto:anzeigen@degruyter.com)

© 2020 Walter de Gruyter GmbH, Berlin/Boston

**TYPESETTING** VTeX UAB, Lithuania

**PRINTING** Franz X. Stückle Druck und Verlag e.K., Ettenheim



## Contents

### **Thematic Issue: Internet of Things**

Guest Editor: Sebastian Steinhorst

Host Editor: Andreas Herkersdorf

### **Editorial**

Sebastian Steinhorst

**Internet of Things — 205**

### **Regular Papers**

Ryan A. Cooke and Suhaib A. Fahmy

**Exploring hardware accelerator offload for the Internet of Things — 207**

Ege Korkan, Sebastian Kaebisch, and Sebastian Steinhorst

**Streamlining IoT system development with open standards — 215**

Mohammad Hamad, Zain A. H. Hammadeh, Selma Saidi, and Vassilis Prevelakis

**Temporal-based intrusion detection for IoV — 227**

Saravanan Ramanathan, Nitin Shivaraman, Seima Suryasekaran, Arvind Easwaran, Etienne Borde, and Sebastian Steinhorst

**A survey on time-sensitive resource allocation in the cloud continuum — 241**

Ahmad Tarraf and Lars Hedrich

**From transistor level to cyber physical/hybrid systems: Formal verification using automatic compositional abstraction — 257**

### **Distinguished Dissertations**

Yannic Maus

**The power of locality: Exploring the limits of randomness in distributed computing — 271**

Christian Wressnegger

**Efficient machine learning for attack detection — 279**

Felix Günther

**Modeling advanced security aspects of key exchange and secure channel protocols — 287**

