31th International Conference on Software, Telecommunications and Computer Networks - SoftCOM 2023

WELCOME

SYMPOSIUM INFORMATION

COMMITTEE

PROGRAM

TRACKS

AUTHORS

Proceedings of the 14th Symposium on Green Networking and Computing (SGNC 2023)
September, 21– 23, 2023, Split, Croatia

ISBN: 978-953-290-140-5

In cooperation with:

IEEE Technical Committee on Green Communications & Computing

Technicaly cosponsored by:

IEEE

IEEE ComSoc
IEEE Communications Society

Organisers:

FESB

ORGANIZER MESSAGE FOR THE 14TH SYMPOSIUM ON GREEN NETWORKING AND COMPUTING (SGNC 2023)

Foreword

I am honored to present the Proceedings of the 14th Symposium on Green Networking and Computing (SGNC2023), which is one of the oldest international scientific symposiums dedicated to exploring innovative solutions for sustainable computing and networking. This symposium provides a unique forum for researchers, professionals, and industry leaders to share their latest advancements, fostering collaboration and driving progress in the field. The Proceedings of the 14th Symposium on Green Networking and Computing (SGNC2023) serve as a platform for advancing sustainable and energy-efficient technologies in computing and networking. The 14th edition of SGNC highlights groundbreaking research that addresses critical challenges in energy efficiency, resource optimization, and sustainability in modern computing systems. The selected contributions exemplify excellence in their respective areas, showcasing innovative approaches and practical solutions to the pressing issue of reducing the environmental impact of information technology (IT) operations.

As environmental concerns continue to grow, the role of researchers and technologists in mitigating the ecological impact of IT infrastructure is more critical than ever. The collection of research papers in this proceedings highlights cutting-edge innovations, methodologies, and findings that address the challenges of energy consumption, carbon emissions, and resource management in contemporary computing systems. The papers included in this year's proceedings reflect the symposium's emphasis on exploring innovative approaches to sustainability. The 14th in a row Symposium on Green Networking and Computing (SGNC 2023) was organized in the frame of the 31st International Conference on Software, Telecommunications and Computer Networks (SoftCOM 2023). The SGNC 2023 symposium was held on September 21-22, 2023, in Split, Croatia. The organizer of the 14th Symposium on green networking and computing (SGNC 2023) is the Faculty of electrical engineering, mechanical engineering and naval architecture (FESB) of the University of Split, Croatia. The SGNC 2023 symposium is organized in cooperation with the IEEE ComSoc Technical Committee on Green Communications and Computing (TCGCC) and with the support of the Croatian ACM chapter (CRO ACM). In the frame of the 14th SGNC 2023 symposium, one keynote speech on the topic of server selection in the Internet continuum was held and three accepted papers were presented in the Special session on green networking and computing. Topics analyzed in the presented papers include: a machine learning-based approach for workload-level power estimation in real-world data centres; energy-efficient 5G networks supported by renewable energy sources, reconfigurable intelligent surfaces, and Unmanned Aerial Vehicles (UAVs); and adaptive mechanisms for improving energy efficiency and battery life in Internet of Things (IoT) devices.

The papers included in this proceedings showcase the depth and breadth of innovation in green networking and computing. They underscore the importance of interdisciplinary collaboration and real-world application in achieving sustainable technological progress. I extend gratitude to all the authors for their valuable contributions and to the reviewers for their diligent evaluation. I also express appreciation to the international organizing committee members for their support in making this symposium possible. I hope that these proceedings will serve as a valuable resource for researchers, professionals, and policymakers seeking to deepen their understanding of the topic dedicated to green networking and computing and inspire further research and innovation in this crucial field.

Editor

Josip Lorincz, PhD

PROCEEDINGS INFORMATION

Proceedings of the 14th Symposium on green networking and computing 2023 (SGNC 2023)
Editor: Josip Lorincz, PhD, Faculty of electrical engineering, mechanical engineering and naval architecture (FESB), University of Split, Croatia
The 14th Symposium on green networking and computing 2023 (SGNC 2023)
International Conference on Software, Telecommunications and Computer Networks (*SoftCOM* 2023)

ISBN: 978-953-290-140-5
Additional copies requests (proceedings USB and paper) and all technical inquiries should be addressed to:
Josip Lorincz, Ph. D.
FESB, University of Split
SoftCOM conference - Symposium on Green Networking and Computing (SGNC)
R. Boškovića 32
21000 Split
Croatia
Tel. +385 21 305 665
Email: josip.lorincz@fesb.hr

Web SGNC 2023: https://2023.softcom.fesb.unist.hr/wp-content/uploads/2023/05/2023_CfP_SGNC-2023_Green-net_lorincz.pdf

http://www.josip-lorincz.com/Portals/0/2023_CfP_SGNC%202023_Green%20net_lorincz.pdf?ver=jCmWYlzlNHy3pZufLwBMcw%3d%3d

INTERNATIONAL SYMPOSIUM COMMITTEE

Symposium chair:

Josip Lorincz (*josip.lorinncz@fesb.hr*)
FESB, University of Split, Croatia

Committee members:

Marco Ajmone Marsan, *Politecnico di Torino, Italy*

Fawaz Al-Hazemi, *Korea Advanced Institute of Science and Technology (KAIST), South Korea*

Luca Chiaraviglio, *University of Rome Tor Vergata, Italy*

Ken Christensen, *University of South Florida, USA*

Paolo Dini, *Centre Tecnològic de Telecomunicacions de Catalunya, Spain*

Toni Mastelić, *Ericsson Nikola Tesla d.d., Croatia*

Mario Pickavet, *Ghent University, Belgium*

Michele Rossi, University of Padova, Italy

Jinsong Wu, *Universidad de Chile, Chile*

SYMPOSIUM PROGRAM

SS4 – Special session on Green Networking and Computing
Session chair: *Josip Lorincz, Ph. D., FESB, University of Split, Croatia*
September 21, 2023, 09:00 – 10:30, Conference room Jugo

Tracks

- *Keynote Speech*
- *Special Session on Green Networking and Computing*

Keynote Speech

Keynote speech title: Server Selection in the Internet Continuum

September 22, 2023, 11:00-12:30, Conference room BURA

Marco Ajmone Marsan, PhD

IMDEA Networks Institute, Spain, Politecnico di Torino, Italy

Abstract: The Internet is evolving toward a distributed system comprising interconnected computing facilities with variable performance, at different distances from end users. This distributed system is often celled the Internet Continuum. In this context, users and service operators must select the servers on which computations are best allocated. In this talk we discuss the server selection problem, and we instantiate it on the facilities that are most widely available today, i. e., on a mix of cloud and edge computing infrastructures.

Marco Ajmone Marsan (marco.ajmone@imdea.org) is a part-time Research Professor at the IMDEA Networks Institute in Spain and an Emeritus Professor of Politecnico di Torino. From 1974 to 2021 he was at the Politecnico di Torino, in the different roles of an academic career, with an interruption from 1987 to 1990, when he was a full professor at the Computer Science Department of the University of Milan. He obtained degrees in EE from the Politecnico di Torino and the University of California, Los Angeles (UCLA). He served in the editorial board of several international journals, and chaired the steering committee of the ACM/IEEE Transactions on Networking. He was the General Co-chair of Infocom 2013 and ICC 2023. He is a Fellow of the IEEE, and a member of the Academia Europaea and of the Academy of Sciences of Torino. He is qualified as “ISI Highly Cited researcher” in computer science. He received a honorary degree in Telecommunication Networks from the Budapest University of Technology and Economics. He was the Vice-Rector for Research, Innovation and Technology Transfer at the Politecnico di Torino, and the Director of IEIIT-CNR. He was the Italian delegate in the ICT and IDEAS Committees of FP7.

SS4 – Special Session on Green Networking and Computing

Special session organizer: *Josip Lorincz (University of Split, Croatia)*
Special session chair: *Josip Lorincz (University of Split, Croatia)*

- **Estimating Power Consumption of Collocated Workloads in a Real-World Data Center**
  Pritam Jaywant Chaudhari, Satoshi Kaneko and Taku Okamura (Hitachi, Ltd., Japan)

- **5G Networks Supported by UAVs, RESs, and RISs**
  Adam Samorzewski and Adrian Kliks (Poznan University of Technology, Poland)

- **An Adaptive Energy Saving Mechanism for Middleware of Things**
  David Cavalcanti (Federal University of Pernambuco, Brazil); Danny Hughes (Katholieke Universiteit Leuven, Belgium); Nelson Souto Rosa (Federal University of Pernambuco, Brazil)

Authors

A B C D E F G H I

J K L M N O P Q R

S T U V W X Y Z

C

Chaudhari, Pritam Jaywant

Cavalcanti, David

H

Hughes, Danny

K

Kaneko, Satoshi

Kliks, Adrian

O

Okamura, Taku

R

Rosa, Nelson Souto

S

Samorzewski, Adam

O

Okamura, Taku
Estimating Power Consumption of Collocated Workloads in a Real-World Data Center

R

Rosa, Nelson Souto
An Adaptive Energy Saving Mechanism for Middleware of Things

S

Samorzewski, Adam
5G networks supported by UAVs, RESs, and RISs

Sponsors

The county of Split and Dalmatia

ERICSSON

KRON

T··

HAKOM

OiV

Split Airport

KLUB DEKANA
DEANS' CLUB