

Preface

Computer networks today have a significant impact on our life. In our technological civilization it is impossible to run without networks, and this applies to professional activities as well as private ones. Computer networks are the part of computer science whose development not only affects the other existing branches of technical science but also contributes to the development of completely new areas. Thus, the domain of computer networks has become one of the most important fields of research.

Computer networks as well as the entire field of computer science are the subject of constant changes caused by the general development of technologies and by the need for innovation in their applications. This results in a very creative and interdisciplinary interaction between computer science technologies and other technical activities, and directly leads to perfect solutions. New methods, together with tools for designing and modeling computer networks, are regularly extended. Above all, the essential issue is that the scope of computer network applications is increased thanks to the results of new research and to new application proposals appearing regularly. Such solutions were not even taken into consideration in the past decades. Whereas recent applications stimulate the progress of scientific research, the extensive use of new solutions leads to numerous problems, both practical and theoretical.



23rd International Science Conference *Computer Networks*

This book collates the research work of scientists from numerous notable research centers. The chapters refer to the wide spectrum of important issues regarding the computer networks and communication domain. It is a collection of topics presented at the 23rd edition of the International Conference on Computer Networks. The conference was held in Brunów Palace, located in Brunów – a small village near Lwówek Śląski, Poland, during June 14–17, 2016. The conference, organized annually since 1994 by the Institute of Informatics of Silesian University of Technology together with the Institute of Theoretical and Applied Informatics in Gliwice, is the oldest event of its kind in Poland. The current edition was the 23rd such event, and the international status of the conference was attained eight years ago, with the ninth international edition taking place in 2016. Just like previous events in the series, the conference took place under the auspices of the Polish section of IEEE (technical co-sponsor). Moreover, the

conference partner was iNEER (International Network for Engineering Education and Research).

In 2016 the total number of submitted conference papers was 72. The presented papers were accepted after careful reviews made by at least three independent reviewers in a double-blind way. The acceptance level was 50 %, and thus the proceedings contain 36 papers, including 32 full papers and four short ones. The chapters are organized thematically into several areas within the following tracks:

- Computer Networks

This group of papers is the largest one. General issues of networks architecture, analyzing, modeling, and programming are covered. Moreover, topics on wireless systems and wireless sensor networks, security concerns, Internet technologies, SDN, WSN, CPN, and industrial networks modeling and analysis, among others, are included.

- Teleinformatics and Communications

This section contains topics on load balancing in LTE technology, security of speaker verification, and analysis of USB 3.1 delays.

- New Technologies

New technologies in computer networks refers to topics on quantum network protocols, quantum direct communication, and multilevel virtualization in cloud computing.

- Queueing Theory

The domain of queueing theory is usually one of the most strongly represented areas at the Computer Network conference. Several papers are included, e.g., a paper on developing a confidence estimation of the stationary measures in high-performance multiservers, an article on new a multidimensional Erlang's ideal grading model with queues, a contribution on queueing models with a contingent additional server while considering two-server queueing systems with a finite buffer, a paper on the usage of Markov chains in modeling the queues inside IP routers, and an article on a dual tandem queue consisting of two multiserver stations without buffers.

- Innovative Applications

The papers in this section refer to research in the area of innovative applications of computer networks theory and facilities. There are contributions on innovative usage of cloud computing systems, frameworks for integration of IT structures and for various home devices, social network analysis, alleviation of network uncertainty in networked control systems, localization of a radio wave source, and a method of creating a signal classifier.

Each group includes highly stimulating studies that may interest a wide readership.

In conclusion, on behalf of the Program Committee, we would like to express our gratitude to all authors for sharing their research results as well for their assistance in developing this volume, which we believe is a reliable reference in the computer networks domain.

We also want to thank the members of the Technical Program Committee for their participation in the reviewing process.

April 2016

Piotr Gaj
Andrzej Kwiecień

Computer Networks

23rd International Conference, CN 2016, Brunów,
Poland, June 14-17, 2016, Proceedings

Gaj, P.; Kwiecień, A.; Stera, P. (Eds.)

2016, XVI, 436 p. 174 illus., Softcover

ISBN: 978-3-319-39206-6