

Information Sciences and Technologies Bulletin of the ACM Slovakia



Association for
Computing Machinery

Advancing Computing as a Science & Profession

December 2011
Volume 3, Number 4

M. Košík	A Contribution to Techniques for Building Dependable Operating Systems	1
P. Drahoš	Photo-Realistic Head Model for Real-Time Animation	12
S. Machalík	Image Analysis in Tribodiagnostics	23
G. Tutoky	Discovery and Exploitation of Knowledge in Collaboration Social Networks	28
Special Section on the ACM Student Project of the Year 2011 Competition		
M. Bieliková	Preface to Special Section on the ACM Student Project of the Year 2011 Competition	37
P. Bielik	Personalized Training Plan Recommendation and Activity Tracking for a Healthier Lifestyle	39
M. Labaj	Implicit Feedback Based Recommendation and Collaboration	41

continued on back cover

Aim and Scope of the Information Sciences and Technologies Bulletin of the ACM Slovakia

ACM Slovakia offers a forum for rapid dissemination of research results in the area of computing/informatics and more broadly of information and communication sciences and technologies. It is primarily a web based bulletin publishing results of dissertations submitted at any university in Slovakia or elsewhere, perhaps also results of outstanding master theses. Besides that, conferences that meet bulletin's expectations with regard to scientific rigor are invited to consider publishing their papers in the bulletin in form of special issues. Besides the web version of the bulletin, a paper version is available, too.

The Bulletin aims:

- To advance and to increase knowledge and interest in the science, design, development, construction, languages, management and applications of modern computing a.k.a. informatics, and more broadly of information and communication sciences and technologies.
- To facilitate a communication between persons having an interest in information and communication sciences and technologies by providing a forum for rapid dissemination of scholarly articles.

Scope of the Bulletin is:

- original research in an area within the broader family of information sciences and technologies, with a particular focus on computer science, computer engineering, software engineering and information systems, and also other similarly well established fields such as artificial intelligence or information science.

Types of contributions:

- **Extended abstracts of doctoral dissertations.** This is the primary type of article in the Bulletin. It presents main contributions of the dissertation in form of a journal paper together with separate section with list of published works of the author. In Slovakia and the Czech Republic, it corresponds to typical length of so called *autoreferat*. In fact, it is envisaged that publishing the extended abstract in the Bulletin makes *autoreferat* obsolete and eventually can replace it completely. It should be noted that by publishing it in the Bulletin, the extended abstract will receive a much wider dissemination. Exceptionally, at the discretion of the Editorial Board, the Bulletin may accept extended abstracts of other than doctoral theses, e.g. Master theses, when research results reported are sufficiently worthy of publishing in this forum. Rules and procedures of publishing are similar.
- **Conference papers.** The Bulletin offers organizers of interesting scientific events in some area within the scope of the Bulletin to consider publishing papers of the Conference in the Bulletin as its special issue. Any such proposal will be subject of discussion with the Editorial Board which will ultimately decide. From the scientific merit point

of view, method of peer reviewing, acceptance ratio etc. are issues that will be raised in the discussion.

Besides that the Bulletin may include other types of contributions that will contribute to fulfilling its aims, so that it best serves the professional community in the area of information and communication sciences and technologies.

Editorial Board

Editor in Chief

Pavol Návrat

Slovak University of Technology in Bratislava, Slovakia

Associate Editor in Chief

Mária Bieliková

Slovak University of Technology in Bratislava, Slovakia

Members:

Andras Benczur

Eötvös Loránd University, Budapest, Hungary

Johann Eder

University of Vienna, Austria

Viliam Geffert

P. J. Šafárik University, Košice, Slovakia

Tomáš Hruška

Brno University of Technology, Czech Republic

Mirjana Ivanović

University of Novi Sad, Serbia

Robert Lorencz

Czech Technical University, Prague, Czech Republic

Karol Matiaško

University of Žilina, Slovakia

Yannis Manolopoulos

Aristotle University, Thessaloniki, Greece

Tadeusz Morzy

Poznan University of Technology, Poland

Valerie Novitzká

Technical University in Košice, Slovakia

Jaroslav Pokorný

Charles University in Prague, Czech Republic

Luboš Popelínský

Masaryk University, Brno, Czech Republic

Branislav Rován

Comenius University, Bratislava, Slovakia

Václav Snášel

VŠB-Technical University of Ostrava, Czech Republic

Jiří Šafařík

University of West Bohemia, Plzeň, Czech Republic

Executive Editor: *Peter Lacko*

Cover Design: *Peter Lacko*

Typeset in L^AT_EX using style based on ACM SIG Proceedings Template.

Instructions to the authors

Publishing procedure

All contributions are web-published. A contribution is published without unnecessary delay right after it has been accepted. Contributions are published on the fly in the current issue. It is at the discretion of the Editor-in-chief to determine, when the current issue is closed and a subsequent new one is open. There will be at least two issues in a year but it is left up to the Editor-in-chief to adjust periodicity of the Bulletin to actual needs.

Extended abstracts of theses is the primary type of article in the Bulletin. Each extended abstract will be annotated by identifying the thesis supervisor, who must recommend it for publication and stands for the Editorial Board in a role similar to a reviewer. We offer publishing extended abstracts on the Bulletin's web before the thesis is defended. This preliminary publishing is a specific service to the academic community. As soon as we learn about successful defence, the extended abstract gains the status of accepted paper and will be included in the forthcoming issue. The accepted paper will be annotated with the date of successful defence and name of the institution where the defence took place.

It is the policy of the Bulletin to offer a free access to all its articles on the web. Moreover, the publisher will seek opportunities to promote as wide as possible access and/or indexing of the articles. All the past issues remain accessible on the web as part of the web portal of the Bulletin. Closed issues will be made available also in a printable form, free for downloading and printing by anyone interested.

Policy on Originality

It is the policy of the Bulletin that Slovak University of Technology be the sole, original publisher of articles. Manuscripts that have been submitted simultaneously to other magazines, journals or to conferences, symposia, or workshops without the prior written consent of the Editor-in-Chief will be rejected outright and will not be reconsidered. Publication of expanded versions of papers that have been disseminated via proceedings or newsletters is permitted only if the Editor-in-Chief judges that there is significant additional benefit to be gained from journal publication. A conference chairperson can arrange with the Editor-in-Chief to publish selected papers from conferences, symposia, and workshops, after suitable reviewing. The papers must meet the editorial requirements for research articles. Acknowledgement of the originating conference will appear as a credit when the paper is published in the Bulletin.

Manuscript information for extended abstracts of doctoral dissertations

All contributions are submitted electronically. Send your manuscript as L^AT_EX sources and .pdf files by e-mail to editor.acm@fiit.stuba.sk. Paper's length should be 6-12 pages. Please, use L^AT_EX style, which is available to download at bulletin web-page <http://slovakia.acm.org/bulletin/>.

Some remarks to the provided style:

- **Headings and Abstract**
The heading must contain the title, full name, and address of the author(s), thesis supervisor, abstract of about 100-200 words.
- **Categories and Subject Descriptors**
Define category and subject descriptors according to ACM Computing Classification System (see <http://www.acm.org/about/class/1998/>).
- **Keywords**
Please specify 5 to 10 keywords.
- **Equations**
You may want to display math equations in three distinct styles: inline, numbered or non-numbered display (we recommend the numbered style). Please make sure that your equations are clearly formulated and described.
- **Figures and tables**
Figures and tables cannot be split across pages, the best placement for them is typically the top or the bottom of the page nearest their initial cite. To ensure this proper "floating" placement of figures/table, use the environment figure/table to enclose the figure and its caption.
- **References**
Please use BibTeX to automatically produce the bibliography. If possible use abbreviations like: Proceedings – Proc., International – Int., Conference – Conf., Journal – J.
- **Selected papers by the author**
This section is used for thesis extended abstracts. Please write down all publications which are related to your thesis.

J. Matyáš	FPGA-Based RONJA Twister	43
B. Micenková	Verification of Authenticity of Stamps in Documents	45
P. Praus	Framework for Network Management to Support Simulation of Varying Network Conditions	47
K. Rástočný	Adaptive Views as a Mean for Exploratory Semantic Search	49
J. Rus	Dynamic Mesh Compression with Clustering	51
P. Sloup	WebGL Earth	53
P. Šimurda	Barcode Localization in Image	55
J. Vorba	Optimal Strategy for Connecting Light Paths in Bidirectional Methods for Global Illumination Computation	57

