

ISSN 0972 - 9038

I
J
C
S
A

International Journal of Computer Science & Applications

VOLUME 11, ISSUE 1

MAY 2014

Editor-in-Chief
Rajendra Akerkar

Special Issue on
Multimedia – Processing and Applications

Dumitru Dan Burdescu
Guest Editor

Published by
Technomathematics Research Foundation, India

International Journal of Computer Science & Applications



Editorial Office: Technomathematics Research Foundation,
204/17 Kh, New Shahupuri, Kolhapur 416001, India.
E-mail: editor@tmrfindia.org

Copyright © 2014 by Technomathematics Research Foundation

International Journal of Computer Science & Applications (ISSN 0972 – 9038) is high quality electronic journal published by Technomathematics Research Foundation, Kolhapur, India.

The www-site of IJCSA is <http://www.tmrfindia.org/ijcsa.html>

IJCSA

All rights reserved. This journal issue or parts thereof may not be reproduced in any form or by any means, electrical or mechanical, including photocopying, recording or any information storage and retrieval system now known or to be invented, without written permission from the copyright owner.

Permission to quote from this journal is granted provided that the customary acknowledgement is given to the source.



EDITORIAL BOARD

Advisory Editor: Douglas Comer, *Purdue University, USA*

Editor-in-Chief: Rajendra Akerkar, *Technomathematics Research Foundation, India*
Western Norway Research Institute, Norway

Associate Editors

Costin Badica, University of Craiova, Craiova, Romania
 Patrick Brézillon, University Pierre and Marie Curie (UPMC), France
 Will Browne, Victoria University of Wellington, New Zealand
 Lenka Carr-Motyczkova, Palacky University, Czech Republic
 Barbara Catania, Università di Genova, Italy
 Jianer Chen, Texas A&M University, Texas, USA
 Daoud S Daoud, Eastern Mediterranean University, Cyprus
 Yuh-Jong Hu, National Chengchi University, Taipei, Taiwan (R.O.C.)
 Ivan Jelínek, Czech Technical University in Prague, Czech Republic
 Jason Jung, Yeungnam University, S. Korea
 Peter Kacsuk MTA SZTAKI, Hungary
 Osamu Katai, Kyoto University, Sakyo-ku, Kyoto, Japan
 Evangelos Kranakis, Carleton University, Canada
 Roger RN. Nkambou, Université du Québec à Montréal, Canada
 Hans Juergen Ohlbach, Ludwig-Maximilians-Universität, Germany
 Parag C. Pendharkar, Pennsylvania State University, Harrisburg, USA
 Vijay Raghavan, University of Louisiana at Lafayette, USA
 Chunming Rong, University of Stavanger, Stavanger, Norway
 Priti Srinivas Sajja, Sardar Patel University, India
 Cliff A. Shaffer, Virginia Tech, Blacksburg, USA

Council of Editors

Stuart Aitken University of Edinburgh, UK
 JF Baldwin University of Bristol, UK
 Pavel Brazdil LIACC/FEP, University of Porto, Portugal
 Jacques Calmet Universität Karlsruhe Germany
 David Camacho Universidad Autónoma de Madrid, Spain
 K. V. Dinesha IIT, Bangalore, India
 Hai-Bin Duan Beihang University, P. R. China
 Maria Ganzha IBS PAN and University of Gdansk, Poland
 Henry Hexmoor Southern Illinois University, U.S.A.
 Huan Liu Arizona State University, USA
 Marcin Paprzycki IBS PAN and WSM, Poland
 Dana Petcu Western University of Timisoara, Romania
 Sugata Sanyal Tata Institute of Fundamental Research, India
 Ivan Bruha McMaster University, Canada
 David Hung-Chang Du University of Minnesota, USA
 Yakov I. Fet Russian Academy of Sciences, Russia
 S. K. Gupta IIT, New Delhi, India
 Ray Jarvis Monash University, Victoria, Australia
 Pawan Lingras Saint Mary's University, Halifax, Canada
 Pericles Loucopoulos UMIST, Manchester, UK
 C. R. Muthukrishnan Indian Institute of Techno., Chennai, India
 Shahram Rahimi Southern Illinois University, Illinois, USA
 Dharmendra Sharma University of Canberra, Australia
 José M. Valls Ferrán Universidad Carlos III, Spain
 Krzysztof Wecel The Poznan University of Economics, Poland



CONTENTS (Vol. 11, No. 1, May 2014)

| | |
|---|----------|
| EDITORIAL <i>DUMITRU DAN BURDESCU, University of Craiova, Craiova, Dolj, Romania</i> | iii |
| DATA ANALYSIS IN THE INTELLIGENT BUILDING ENVIRONMENT Dalia Kriksciuniene, Tomas Pitner, Adam Kucera, Virgilijus Sakalauskas | 1– 17 |
| THE EFFICIENCY OF ENCRYPTION ALGORITHMS IN EAX MODE OF OPERATION IN IPSEC-BASED VIRTUAL PRIVATE NETWORKS FOR STREAMING RICH MULTIMEDIA DATA Alexander Uskov | 18 - 36 |
| NOVEL NOUN PRONUNCIATION UNIFICATION APPROACH TO IMPROVE STORY BOUNDARY IDENTIFICATION IN THE TRANSCRIPTION OF MALAY NEWS BROADCASTS Zainab A. Khalaf, Tan Tien Ping | 37– 55 |
| AN EXPLORATION TO USER EXPERIENCE OF A MOBILE TABLET APPLICATION THROUGH PROTOTYPING Chrysoula Gatsou, Anastasios Politis, Dimitrios Zevgolis | 56 - 74 |
| A SPATIAL SEGMENTATION METHOD Dumitru Dan Burdescu, Marius Brezovan, Liana Stanescu, Cosmin Stoica Spahiu | 75 - 100 |



Guest Editorial (Vol. 11, No. 1, May 2014)

The term "multimedia" refers to interactive forms of digital media that combine elements such as text, graphics, animation, audio and video. The digital revolution has dramatically changed the way we work, learn, play and communicate. It has created jobs that did not exist a decade ago and it has profoundly changed others. People who are skilled in the production and application of Multimedia technologies are in high demand. Career options for graduates with relevant creative and technical expertise can be found in areas such as web design, graphic design, publishing, photography, illustration, animation, game development, software development, audio production, video production, film and television post-production, visual effects, advertising, marketing, corporate communications, education and training.

Multimedia is emerging rapidly as an exciting new paradigm to provide computing life services at any time and everywhere. Our conference provides a chance for academic and industry professionals to discuss recent progress in the area of Multimedia environment including models and systems, theories, methods, algorithms, new directions, novel applications associated with the utilization, and acceptance of computing devices and systems. It provide a high profile, leading edge forum for academic researchers, industrial professionals, engineers, consultants, managers, educators and policy makers working in the field to contribute and disseminate innovative new work on Multimedia.

Recent advances in pervasive computers, networks, telecommunications, and information technology, along with the proliferation of Multimedia mobile devices - such as laptops, iPods, personal digital assistants (PDA), and cellular telephones - have stimulated the development of intelligent pervasive Multimedia applications. Multimedia search and retrieval actively looks for novel solutions, theoretical foundations, and better representations to address accuracy, efficiency, and scalability problems in Multimedia search area, as well as a variety of Multimedia applications based on search technologies such as Multimedia search engines, personal media data management, and copyright infringement detection. New digital and Multimedia technologies are increasingly being adopted in traditional media and communication fields, e.g. digital Multimedia in the audiovisual sector and Multimedia applications in education. The range of Multimedia applications is growing across other sectors too, such as tourism, entertainment and architecture. The Multimedia design industry is very fluid. People tend to build a set of skills that allow them to take on a number of different roles that change from project to project. Multimedia is for creative and enquiring minds, and for those who are interested in making new Multimedia services and products, or telling stories in an innovative way.

(Continued on next page)



Guest Editorial (Vol. 11, No. 1, May 2014)

These key technologies are creating a Multimedia revolution that will have significant impact across a wide spectrum of consumer, business, healthcare, and governmental domains. Yet many challenges remain, especially when it comes to efficiently indexing, mining, querying, searching, and retrieving Multimedia data. Difficult research challenges involve the adaptation of intelligent software tools to the tight requirements posed by modern application.

Multimedia combines the creativity of art and design with the skills and knowledge of computer technologies and programming to create interactive digital media products such as online and mobile applications, screen based or environmentally interactive designs. Areas include animation, sound production, 3D modeling, web programming, internet authoring, e-Learning, games development, graphic and interaction design, interactive programming, 3D/ animation, video production and audio technology, privacy and security, performance and scalability, cloud computing, hardware and software platforms. The major focus is on the integration of theory and technology and their practical application in design projects.

The Multimedia - Processing and Applications (MMAP) Symposium within the framework FEDERATED CONFERENCE ON COMPUTER SCIENCE AND INFORMATION SYSTEMS (FedCSIS) addressed several themes related to theory and practice within Multimedia domain. The conference brings together researchers, developers, creators, educators, and practitioners in image processing, machine vision, computer graphics, virtual and augmented environments, and visual communications to share their latest achievements and explore future directions and synergies in these exciting areas. This conference is fully supported and papers have been through a series of rigorous reviews by the leading academic and industry experts from the global processing community.

The enormous interest in Multimedia from many activity areas (medicine, entertainment, education) led researchers and industry to make a continuous effort to create new, innovative Multimedia algorithms and application. From papers that were accepted at MMAP 2013 we selected and invited the best papers for publication in this special issue. A career in Multimedia is for creative people who enjoy working with the latest digital technologies.

Dumitru Dan Burdescu
Guest Editor



Reviewers (Vol. 11, No. 1, May 2014)

Vladimir Uskov, *Department of Computer Science and Information Systems, Bradley University, U.S.A.*

Igor Kotenko, *St. Petersburg Institute for Informatics and Automation of the Russian Academy of Science, Russian Federation*

Kazuo Ohzeki, *Shibaura Institute of Technology, Japan*

Dalia Kriksciuniene, *Vilnius University, Lithuania*

Adrian Giurca, *Brandenburg University of Technology, Germany*

Guillermo Morales-Luna, *Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional, Mexico*

Riri Fitri Sari, *University of Indonesia*

Giuseppe Mangioni, *DIEEI - University of Catania, Italy*

Carl James Debono, *University of Malta*

Abdel-Badeeh M. Salem, *Ain Shams University of Cairo, Egypt*

Liana Stanescu, *University of Craiova, Romania*

Marius Brezovan, *University of Craiova, Romania*

Mihai Mocanu, *University of Craiova, Romania*