
2nd International Symposium on Computing in Informatics and Mathematics

ISCIM'13, September 26th to September 27th, 2013
Tirana, Albania

Edited by:
Ilir Capuni
Loukas Georgiadis
Oğuz Altun

Epoka University

Editors

Illir Capuni
Epoka University
Tirana, Albania
icapuni@epoka.edu.al

Loukas Georgiadis
University of Ioannina
Ioannina, Greece
loukas@cs.uoi.gr

Oğuz Altun
Epoka University
Tirana, Albania
oaltun@epoka.edu.al

ISBN 978 - 9928-135-10-0

Published online and open access by Epoka University, Rr. Tiranë-Rinas, Km. 12, 1039 Tirana. Online available at <http://iscim.epoka.edu.al/proceedings>.

Publication date

December, 2013

International Symposium on Computing in Informatics and Mathematics 2013

This work is licensed under a Creative Commons Attribution-NoDerivs 3.0 Unported license (CC-BY-ND 3.0):

<http://creativecommons.org/licenses/by-nd/3.0/legalcode>.

In brief, this license authorizes each and everybody to share (to copy, distribute and transmit) the work under the following conditions, without impairing or restricting the authors moral rights:

- Attribution: The work must be attributed to its authors.
- No derivation: It is not allowed to alter or transform this work. The copyright is retained by the corresponding authors.

ISBN 978 - 9928 - 135 - 10 - 0

Hard copies of this publication are available from
Rr. Tiranë-Rinas, Km. 12
1039 Tirana
Albania
+355 4 2232 086
+355 4 2222 117 (FAX)
email: info@epoka.edu.al

Preface

The papers in this volume were presented at the 2nd International Symposium on Computation in Informatics and Mathematics (ISCIM 2013), hosted by Epoka University in Albania. The conference was held in Tirana, Albania, September 26-27, 2013.

The program committee selected for inclusion in the scientific program 24 out of 43 submissions. All submissions were refereed by a minimum of two reviewers. The program committee also accepted submissions that presented surveys and preliminary results of ongoing research, which were presented as posters. Full versions of these papers are expected to appear in scientific journals in the near future.

The committee selected the paper “SENOCLU, Energy Efficient Approach for Unsupervised Node Clustering in Sensor Networks” by Adriola Faqolli, for Best Paper. The Best Student Paper was awarded to Ioannis Chionis, Maria Chroni, Angelos Fylakis, and Stavros Nikolopoulos for their paper entitled “Software, Image and Audio Watermarking Algorithmic Techniques”. Finally, the Best Poster was awarded to Erind Bedalli and Ilia Ninka for their paper “Implementation of some cluster validity methods for fuzzy cluster analysis”. All awards were accompanied by prizes sponsored by the Albanian Educational Foundation.

ISCIM 2013 was a result of a serious effort by a large group of people and institutions, which we acknowledge in the following pages. We are especially grateful for the support of Epoka University that enabled us to compose a high-quality program of invited speakers, and helped us keep the student fees low. We are also very grateful for the collaboration and support of the Organizing Committee.

We wish to thank all the authors of submitted papers, as well as the referees who assisted the evaluation process.

September 2013

Ilir Capuni
Loukas Georgiadis
Oğuz Altun

Program Committee

Leyla Abazi	South East European University
Elson Agastra	Polytechnic University of Tirana
Songul Albayrak	Yildiz Technical University
Oğuz Altun	Epoka University (co-chair)
Ahmet Fatih Amasyali	Yildiz Technical University
Gokhan Bilgin	Yildiz Technical University
Burak Buke	The University of Edinburgh
Zamir Dika	South East European University
Banu Diri	Yildiz Technical University
Elton Domnori	Epoka University
Alaa Eleyan	Mevlana University
Bekim Fetaji	South East European University
Neki Frashëri	Center for Research and Development in ICT, UPT (co-chair)
Loukas Georgiadis	University of Ioannina (co-chair)
Hakan Haberdar	University of Texas
Albana Halili	Epoka University
Ali Ikiz	Fayetteville State University
Edlira Kalemi	University “Aleksandër Moisiu” Durrës
Derviş Karaboğa	Erciyes University
Miklós Krész	University of Szeged
Luigi Laura	La Sapienza University
Elinda Mece Kajo	Polytechnic University of Tirana
Milenko Mosurović	University of Montenegro
Lindita Mukli	University “Aleksandër Moisiu” Durrës
Stavros Nikopoulos	University of Ioannina
Vladimir Radevski	South East European University
Sadi Seker	University of Texas at Dallas
Yunus Emre Selcuk	Yildiz Technical University
Fehmi Tanrisever	Technische Universiteit Eindhoven
Arban Uka	Epoka University (co-chair)
Renato Werneck	Microsoft Research
Iir Çapuni	Epoka University
Betim Çiço	South East European University (co-chair)
İrfan Şiap	Yildiz Technical University

Additional Reviewers

Majlinda Fetaji	South East European University
Christos Tjortjis	University of Ioannina

Organizing Committee

Oğuz Altun (Chair)
Elton Domnori (Secretary)
Arban Uka (Information contact)
Iilir Çapuni (Publicity chair)
Vladi Kolic
Edlira Kalemi
Yavuz Yardim
Hamza Aksoy
Muharrem Can
Ahmet Fatih Ersoy
Ardi Xhelilaj
Florenc Skuka
Halil Buzkan
Igli Hakrama
Ibrahim Meşegan
Nimet Isufi
Mükremin Özkul
Vijaya Raju Mullagiri
Erisa Terolli

Table of contents

1 Invited talk	
Thirty nine years of stratified trees <i>Peter van Emde Boas</i>	1
2 Theoretical Computer Science	
Dominators in Directed Graphs: A Survey of Recent Results, Applications, and Open Problems <i>Nikos Parotsidis and Loukas Georgiadis</i>	15
A Universal RAM Machine Resistant to Isolated Bursts of Faults <i>Ilij Capuni and Ervin Dervishaj</i>	21
A Survey on Algorithmic Techniques for Malware Detection <i>Ioannis Chionis, Stavros Nikolopoulos and Iosif Polenakis</i>	24
Software, Image and Audio Watermarking Algorithmic Techniques <i>Ioannis Chionis, Maria Chroni, Angelos Fylakis and Stavros Nikolopoulos</i>	29
3 Applied Topics in Computer Engineering	
Measuring the Sentence Level Similarity <i>Ercan Canhasi</i>	35
Enhancements in data redistribution strategies to increase efficiency of large data volumes in Scientific Clouds using FastScale <i>Enkeleda Kuka, Mirela Ndreu, Genti Daci and Aleksander Xhuvani</i> 43	
Statistical estimation of poverty in Albania <i>Evgjeni Xhafaj, Ines Nurja and Alban Xhafaj</i>	49
Primary School Interactive Learning Tool Based On Video Capture Virtual Reality <i>Hseyin Akn Erdem, Semih Utku and en akr</i>	51
Updating web content in real time using Node.js <i>Edlira Kalemi and Krisel Tola</i>	55
Implementation of some cluster validity methods for fuzzy cluster analysis <i>Erind Bedalli and Ilia Ninka</i>	59
SENOCLU, Energy Efficient Approach for Unsupervised Node Clustering in Sensor Networks <i>Adriola Faqolli</i>	64

An Iris Recognition System Based on Angular Radial Partitioning and Statistical Texture Analysis with Sum & Difference Histogram <i>Abbas Memis, Songul Albayrak and Elena Battini Sonmez</i>	74
Analysis of e-Commerce Application in the World and Balkans: The Case of Macedonia <i>Gultac Asilkan, Majlinda Fetaji, Bekim Fetaji and Ozcan Asilkan</i>	81
Prototype System for Multiple Sources Multiple Search Techniques Prediction (Algorithm and architecture) <i>Marika Apostolova Trpkovska and Betim Çiço</i>	88
Optoelectronic Training Architecture for Supervised Filtering Technique <i>Abdullah Bal</i>	94
Quick Combinatorial Artificial Bee Colony -qCABC- Optimization Algorithm for TSP <i>Bezya Grkemli and Dervi Karaboa</i>	97
Modeling a Career Office Information System with UML <i>Erisa Terolli and Iqli Hakrama</i>	102
S-Box Hashing for Text Mining <i>Sadi Evren Seker and Cihan Mert</i>	106
JTimeWarp: A software for Aligning Biological Signals using Warping Methods <i>Burhanettin Irmikci, Ahmet Elbir and Fethullah Karabiber</i>	110
Case Study Analyses of Reliability of Software Application ePasuria <i>Dhuratë Hyseni, Betim Cico, Isak Shabani and Bekim Fetaji</i>	111
4 Computational Mathematics	
Efficient Bootstrap Simulation in Linear Regression <i>Lorenc Ekonomi</i>	117
On the cohomology of the inverse semigroup G of the G -sets of a groupoid G <i>Anjeza Krakulli and Xhezair Teliti</i>	122
Some results on Gamma-near-field <i>Eduard Domi and Islam Braja</i>	126
On generalization of an semi-inner product function <i>Silvana Liftaj and Eriola Sila</i>	130
5 Author Index	132