FP7-REGPOT-2012-2013-1

Grant Agreement: 316087

AComIn:
Advanced Computing for Innovation

FP7 Capacity Programme
Research Potential of Convergence Regions

EVENT ORGANISATION REPORT

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Report about the International Conference "Advanced Computing for Innovation" ACOMIN 2015, an AComin Organised Event

<u>Name and type of the event:</u>
The International Conference
"Advanced Computing for Innovation" ACOMIN 2015

<u>Place, dates:</u>
The Best Western Plus City Hotel, Sofia, Bulgaria
November 10—11, 2015

<u>Programming and Organisation committees:</u>

Programme Committee Chairs
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Gennady Agre   - IICT-BAS, Bulgaria
Kiril Alexiev   - IICT-BAS, Bulgaria
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Diego Calvanese   - Free University of Bozen-Bolzano, Italy
Virginio Cantoni   - University of Pavia, Italy
Darina Dicheva   - Winston-Salem State University, USA
Dimo Dimov - IICT-BAS, Bulgaria

Ivan Dimov - IICT-BAS, Bulgaria

Milena Dobreva   - University of Malta, Malta

John Domingue - Knowledge Media Institute, The Open University, UK

Michel Fliess - ParisTech, LIX - École Polytechnique, France

Krasimir Georgiev   - IICT-BAS, Bulgaria

Oleg Iliev - Fraunhofer Institute for Industrial Mathematics ITWM, Germany

Cedric Join   - University Laurraine, France

Ivan Kalaykov   - Örebro University, Sweden

Dimitar Karastoyanov - IICT-BAS, Bulgaria

Johannes Kraus   - University of Duisburg-Essen, Germany

Sergei O. Kuznetsov   - National Research University Higher School of
Economics, Moscow, Russia

Yann LeCun - New York University, USA

Markos Papageorgiou - Technical University of Crete, Greece

Ioannis Papamichail - Technical University of Crete, Greece

Vincenzo Piuri - University of Milan, Italy

Siegfried Selberherr - The Vienna University of Technology

Kiril Simov - IICT-BAS, Bulgaria

Todor Stoilov - IICT-BAS, Bulgaria

Vidar Thomee - Chalmers University of Technology, Göteborg, Sweden

Participants /number, types/ :
     from IICT - 46
     Bulgarian participants outside IICT - 25
     foreign participants -15
     invited participants - 5

Short description:

The International Conference Advanced Computing for Innovation – 2015 (http://www.iict.bas.bg/acomin15/index.html) aimed at providing a forum for international scientific exchange between Central/Eastern Europe and the rest of the world in several fundamental for computational intelligence topics enabling radical progress and development of novel applications. The conference is composed of four tracks, a number of special sessions and demonstrations.

Main Topics

The conference welcomed submissions of original, high quality papers in such areas of advanced information and communication technologies as:

Advanced Computing:
- efficient methods and tools for analysis of reliability of large-scale models

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- high-performance computing in engineering and environmental problems
- robust methods and algorithms for microstructure analysis of materials and tissues based on high resolution 3D images;
- multiscale and multiphysics simulations of strongly heterogeneous media with strongly nonlinear and/or anisotropic behaviour
- advanced applications of Monte Carlo simulations in computational physics and environmental sciences
- patient specific biomedical applications;
- large-scale environmental models for reliable control of the pollutions/remediation within the frame of given critical levels.

Language and Semantic Technologies:
- advanced methods and tools for processing of textual and semantic data
- large-scale approaches to multilingual terminology
- machine learning and data mining methods for analysing Big Data
- neural networks and deep learning
- advanced eLearning technologies
- digital preservation of cultural heritage for research and education

Signal and Image Processing:
- speech analysis and synthesis;
- efficient methods for image retrieval;
- smart multi-sensor signal and image processing
- advance methods for biometric analysis
- video-analytic technologies for multi-object identification, recognition, tracking, behaviour estimation and event prediction
- fusion of uncertain, highly conflicting attributes data.

Optimisation and Intelligent Control:
- real time decision making;
- multivariable and distributed control systems,
- advanced methods for studying dynamical behaviour of complex industrial systems and processes
- hierarchical optimization in real time applications
- on-line resource allocation in communication and transportation networks
- intelligent diagnostics and predictive maintenance of facilities operating under high risk of incidents

Scientific Programme of the whole event:

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The First Call for Papers for the AComIn conference was published in April 2015, with deadline for submission of extended abstract 13 July 2015. The notification of acceptance was scheduled on 1 August 2015.

All submissions (extended abstracts up to 4 pages) were subject to academic peer review by at least two members of the Programme committee. The selection criteria included accuracy and originality of ideas, clarity and significance of results, and quality of presentation. 42 submissions were accepted for presentation at the Conference.

The scientific programme of the conference can be found in http://www.iict.bas.bg/acomin15/programme.html. Besides the 42 scientific presentations, it also included 5 invited talks presented by AComIn partners:

- *Oleg Iliev.* Pore scale modelling and simulation of flow and reactive transport on 3D CT images
- *Ioannis Papamichail.* Feedback-Based Integrated Motorway Traffic Flow Control
- *John Domingue.* Data and Semantic Technologies for Education
- *Virginio Cantoni.* Interactive, tangible and multisensory technology for a cultural heritage exhibition: the Battle of Pavia
- *Karina Angelieva.* Decisions and Recommendations of the Council of the European Union in the area of open data, open access, and data intensive research

AComIn-related papers presented at the event and published after peer review:

In June 2015 the conference organisers received the agreement of Springer to publish the conference proceedings as a special volume of Springer Studies in Computational Intelligence.

On 21 September 2015 the Publishing Agreement between the Volume Editors - Prof. Svetozar Margenov, Prof. Galia Angelova and Prof. Gennady Agre, on the one side, and Springer International Publishing AG, on the other side was signed.

The Studies in Computational Intelligence Volume entitled "Innovative Approaches and Solutions in Advanced Intelligent Systems" will be published as post-conference Proceedings.

After peer review, the ACOMIN 2015 Programme Committee selected 21 papers for publication in the conference proceedings; 20 of them are related to AComIn project:

- *Ivan Dimov, Venelin Todorov.* Error Analysis of Biased Stochastic Algorithms for the Second Kind Fredholm Integral Equation

- *Stanislav Stoykov, Svetozar Margenov.* Finite Element Method for Nonlinear Vibration Analysis of Plates
- Konstantinos Liolios, Vassilios Tsihrintzis, Krassimir Georgiev, Ivan Georgiev. A Computational Investigation of the Optimal Reaction Type Concerning BOD Removal in Horizontal Subsurface Flow Constructed Wetlands
- *Angelos Liolios, Antonia Moropoulou, Asterios Liolios, Krassimir Georgiev, Ivan Georgiev.* A Computational Approach for the Seismic Sequences Induced Response of Cultural Heritage Structures Upgraded by Ties
- *Jens Kohler, Kiril Simov, Adrian Fiech, Thomas Specht.* On the Performance of Query Rewriting in Vertically Distributed Cloud Databases
- *Virginio Cantoni, Luca Lombardi, Marco Porta, Alessandra Setti.* Interactive, Tangible and Multi-Sensory Technology for a Cultural Heritage Exhibition: the Battle of Pavia
- *Svetla Boytcheva, Galia Angelova, Zhivko Angelov, Dimitar Tcharaktchiev.* Mining Clinical Events to Reveal Patterns and Sequences
- *Ivelina Nikolova, Darina Dicheva, Gennady Agre, Zhivko Angelov, Galia Angelova, Christo Dichev, Darin Madzharov.* Emerging Applications of Educational Data Mining in Bulgaria: The Case of UCHA.SE
- *Olga Kanishcheva, Galia Angelova.* About Sense Disambiguation of Image Tags in Large Annotated Image Collections
- *Kiril Simov, Alexander Popov, Petya Osenova.* Knowledge Graph Extension for Word Sense Annotation
- *Atanas Nikolov, Virginio Cantoni, Dimo Dimov, Andrea Abate, Stefano Ricciardi.* Multi-model Ear Database for Biometric Applications
- *Stanislav Harizanov.* Deblurring Poissonian Images via Multi-Constraint Optimisation
- *Dimitar Karastoyanov, Ivan Yatchev, Iosko Balabozov.* Innovative Graphical Braille Screen for Visually Impaired People
- *Petia Koprinkova-Hristova, Volodymyr Kudriashov, Kiril Alexiev, Iurii Chyrka, Vladislav Ivanov, Petko Nedyalkov.* Smart Feature Extraction from Acoustic Camera Multi-Sensor Measurements
- *Volodymyr Kudriashov.* Multistatic Reception of Non-stationary Random Wiener Acoustic Signal
- *Iurii Chyrka.* Interpolation of Acoustic Field from Nearby Located Single Source
- *Petar Mitankin, Stoyan Mihov.* A New Method for Real-time Lattice Rescoring in Speech Recognition
- *Stefka Fidanova.* Metaheuristic Method for Transport Modelling and Optimisation
- *Todor Stoilov, Krasimira Stoilova, Vassilka Stoilova.* Bi-level Formalization of Urban Area Traffic Lights Control

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- *Aleksey Balabanov.* Building of Numerically Effective Kalman Estimator Algorithm for Urban Transportation Network

Assessment of the added-value of the event to the AComIn dissemination objectives:

The support, provided by AComIn to ACOMIN'15, enabled
- To cover the travel and local expenses of several worldwide known scientists giving invited talks;
- To cover the travel expenses of Dr. Clemens Hofrether, AComIn postdoc, currently working the University of Linz;
- To cover the expenses for organizing the conference.

The AComIn support is acknowledged in the ACOMIN Proceedings as well as at the conference website.

Changes in the financial planning of the AComIn support spending (if any):

There were no changes in the budget plan, Approved by the AComIn Executive Board.

Event organiser:

21 December 2015   Gennady Agre

/DATE/   **/NAME, SIGNATURE/**