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AComIn: Advanced Computing for Innovation

**FP7 Capacity Programme
Research Potential of Convergence Regions**

EVENT ORGANISATION REPORT

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Summary: Report for organisation of the International Workshop on 'Advanced Control and Optimisation: Step Ahead' (ACOSA), 8-10 May 2014, Hotel "Bankya Palace", Bankya, Bulgaria

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Duration: 42 months



Report about an AComin Organised/Supported Event

Name and type of the event: International Workshop on “Advanced Control and Optimisation: Step Ahead” (ACOSA)

<http://iict.bas.bg/acomin/news/8-10-May-2014.pdf>

Place, dates: Hotel “Bankya Palace”, Bankya, Bulgaria, 8-10 May 2014

Programming and Organisation committees:

PROGRAMME COMMITTEE

Acad. Vassil Sgurev (BG) – Chair

Acad. Janusz Kacprzyk (PL) – Co-Chair

Acad. Ivan Popchev (BG)

Corr. Member Mincho Hadjiski (BG)

Prof. Anthony Shannon (AUS)

Prof. Eulalia Szmidt (PL)

Prof. František Čapkovič (SK)

Prof. Jacques Richalet (FR)

Prof. Panagiotis Chountas (UK)

Prof. Taekyun Kim (KOR)

Prof. Maciek Krawczak (PL)

Prof. Franziska Klügl (SE)

Prof. Dimitar Karastoyanov (BG)

ORGANISING COMMITTEE

Assoc. Prof. Lyubka Doukovska (BG) – Chair

Dr. Vassia Atanassova (BG) – Co-Chair

Assoc. Prof. Vladimir Monov (BG)

Assoc. Prof. Vera Angelova (BG)

Assist. Prof. Irina Radeva (BG)

Assist. Prof. Yancho Todorov (BG)

Assist. Prof. Stefan Koynov (BG)

Participants /number, types/:

From IICT – 19

Bulgarian participants outside IICT – 5

Foreign participants – 4

Invited participants – 4

Short description:

The aim of the International Workshop **ACOSA** was to gather specialists interested in the areas of control and optimization, decision making techniques, process control systems, intelligent agents and systems, and other related topics, and to give them floor to present their latest achievements and to engage in fruitful discussions in theoretical and practical aspects.

The event was structured in five topic sessions. **Three of these sessions** were devoted to presentation of new research results, containing a total number of 15 presentations:

- Session A. Contemporary Methods for Assessment and Control of Complex Systems
- Session D. Application Aspects of the Analysis of the Contemporary Methods for Assessment, Control and Optimisation of Complex Processes
- Session E. Applications of the contemporary optimization procedures in the financial and industrial structures

and **two sessions** aimed at giving floor for researchers to engage in oral discussions of particular interest:

- Session B. Discussion on the Benefits of Applying of Advanced Control and Optimisation
- Session C. Discussion on the Implementation of Advanced Control Concepts and Technologies in Small and Medium-sized Enterprises

The ACOSA workshop was opened by Acad. Vassil Sgurev and a presentation of the progress of AComIn project was given by Prof. Galia Angelova. From the three Romanian participating scientists (listed below), Prof. Iulian Dutu from the Hydraulics and Pneumatics Research Institute (INOE 2000-IHP) gave a presentation on the research, currently conducted in the Institute.

The foreign Co-Chair of the Programme Committee, Acad. Janusz Kacprzyk, who was recently elected Foreign Member of the Bulgarian Academy of Sciences, attended the workshop, chaired one of the sessions and opened it with a short talk on the recent achievements obtained in the Institute of System Research at the Polish Academy of Sciences. He also promoted several forthcoming events in the areas of the AComIn project that will be held by the end of 2014 and in 2015 year.

Scientific Programme of the whole event:

8 May 2014

11:00–11:10 Opening Session of the International Workshop on “Advanced Control and Optimisation: Step Ahead” – **Vassil Sgurev**

11:10–11:30 Presentation of the FP7 Project “AComIn (Advanced Computing in Innovation)” – **Galia Angelova**

11.30–13.30 Session A. Contemporary Methods for Assessment and Control of Complex Systems. Chair of Session: **Lyubka Doukovska**

- **Ivan Popchev, Vera Angelova** – *Improved residual bound of the matrix equations*
- **Irina Radeva** – *Synergy in clusters: Approaches to evaluation*
- **Velitchko Djambov** – *Finding the roots of non-linear equations with high definition using the .NET Framework C# and X-MPIR*
- **Margarita Terziyska, Lyubka Doukovska** – *Semi fuzzy neural networks, Part 1: Nonlinear system identification*
- **Margarita Terziyska, Lyubka Doukovska** – *Semi fuzzy neural networks, Part 2: Predictive control*

15:00–17:00 Session B. Discussion on the Benefits of Applying of Advanced Control and Optimisation. Chair of Session: **Janusz Kacprzyk**

9 May 2014

09:00–09:30 Presentation of the Hydraulics and Pneumatics Research Institute (INOE 2000-IHP), Romania – **Alexandru Valentin Radulescu, Catalin Dumitrescu, Iulian Dutu**

11:00–13:30 Session C. Discussion on the Implementation of Advanced Control Concepts and Technologies in Small and Medium-sized Enterprises. Chair of Session: **Ivan Popchev**

15:00–17:30 Session D. Application Aspects of the Analysis of the Contemporary Methods for Assessment, Control and Optimisation of Complex Processes. Chair of Session: **Vladimir Monov**

- **Svetoslav Savov, Ivan Popchev** – *Solution estimates for the discrete time parameter dependent Lyapunov equation*
- **Vassil Sgurev, Stanislav Drangajov** – *A Probabilistic approach to optimizing the path of monitoring the nodes of a network*
- **Tatiana Atanasova, Janko Atanasov** – *Integrated information system for enterprise management*
- **Kiril Kolchakov, Vladimir Monov** – *Examination of an algorithm for non-conflict schedule with diagonal activation of joint sub matrices in a large scale switching matrix*

- **Tasho Tashev, Vladimir Monov** – *Load optimization in a grid structure for parallel computer simulations of the throughput of a crossbar switch node*

10 May 2014

11:00–13:30 Session E. Applications of the contemporary optimization procedures in the financial and industrial structures. Chair of Session: **Dimitar Karastoyanov**

- **George Shahpazov** – *Optimisation procedures in SMEs financial mechanism*
- **Vasil Nikov** – *Significance of the advanced control and optimisation for SMEs*
- **Veselin Shahpazov** – *Forecasting financial markets with artificial intelligence*
- **Mincho Hadjiski, Kosta Boshnakov, Stefan Koynov** – *Control of milling fan load on the base of residual useful life prediction*
- **Chavdar Korsemov, Hristo Toshev** – *Analysis and exploitation of wind generators*

13:30 Closing Session

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

The 15 papers will be published in a separate Workshop Proceeding, and selected best papers will be proposed for publication in relevant renowned research journals.

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

The support, provide by AComIn to ACOSA 2014, enabled:

- To cover the expenses and accommodation of the speakers who presented their novel results in the area of advanced control and optimization.
- All participants were informed about AComIn, its objectives and the state-of-the-art of its development and achieved results. The foreign participants were shown the research potential of IICT-BAS, as fostered by the execution of the AComIn project, thus contributing to the positive public image of the Institute.

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

None.

Reason for the changes during the actual event implementation:

(change of programme, last minute change of invited speakers, etc.)

None.

Event organiser:

30.05.2014

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Assoc. Prof. Lyubka Doukovska