**UNIVERSITY of RUSE
8 STUDENTSKA STR.**
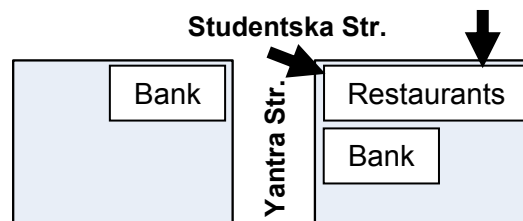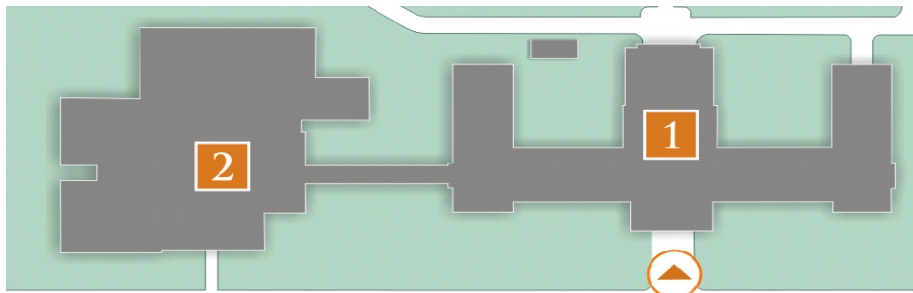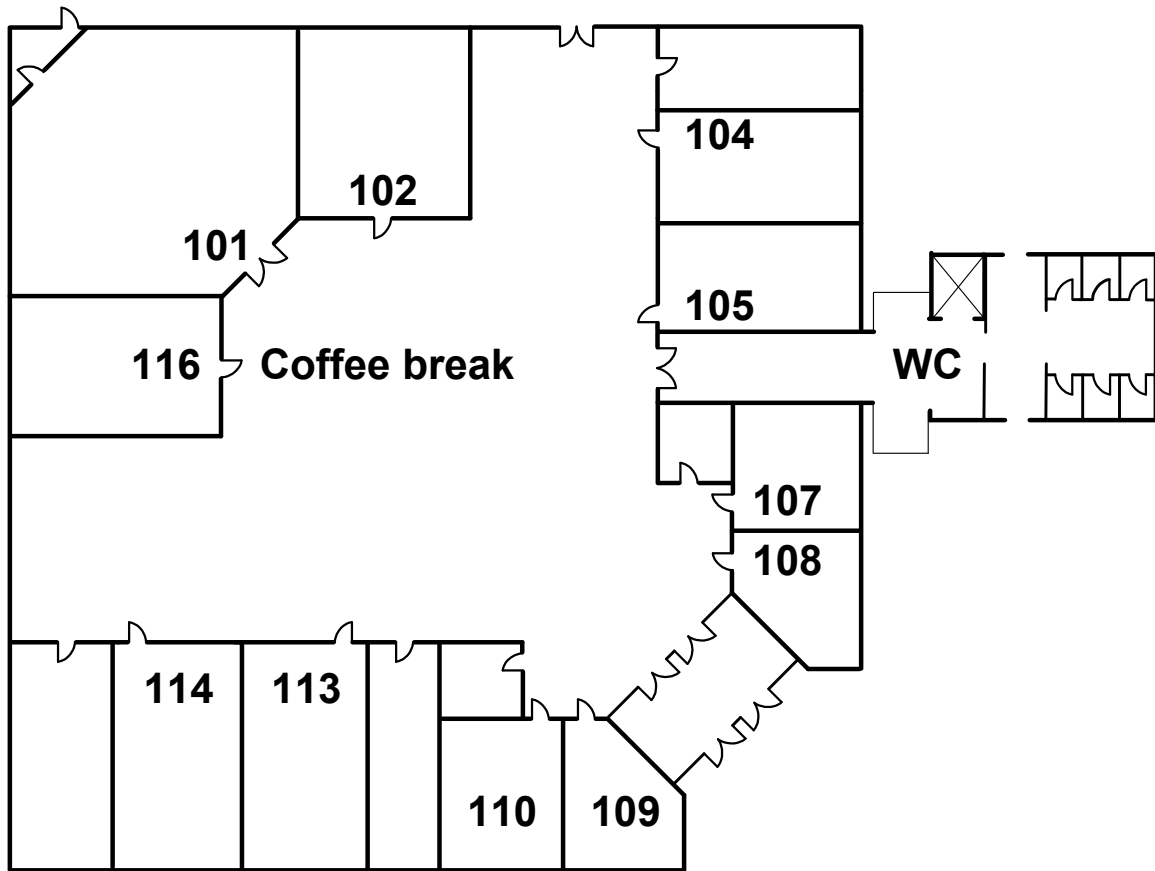

РУСЕНСКИ УНИВЕРСИТЕТ

The new building

The main building

THE NEW BUILDING

102

101

116   **Coffee break**

104

105

WC

107

108

114   **113**

110   **109**

2

1

Studentska Str.

Bank

Yantra Str.

Restaurants

Bank

Dear Participants,

You can use free **WIRELESS INTERNET** via hot-spot points named **CompSys** (no need of login name and password).

You can also use the **COMPUTERS** in the Centre for PhD students – main building, in the middle of the 3 floor.

♦ CONFERENCE OBJECTIVE

The *CompSysTech'13* International Conference is organized by **THE ASSOCIATION FOR COMPUTING MACHINERY,** by **THE JOHN ATANASOFF SOCIETY OF AUTOMATICS AND INFORMATICS** and by **THE BULGARIAN ACADEMIC SOCIETY OF COMPUTER SYSTEMS AND INFORMATION TECHNOLOGIES** and its OBJECTIVE is to intensify the information exchange of results in theoretical research and practical developments in this field.

CompSysTech'13 is organized under the patronage of:
- **Bulgarian Ministry of Education, Youth and Science;**
- **Bulgarian Academy of Sciences;**
- **Bulgarian Chapter of IEEE Computer Society;**
- **Bulgarian Chapter of IEEE Communications Society.**

♦ INTERNATIONAL PROGRAMME COMMITTEE

- **Honorary Co-Chairs:**

Kiril Boyanov, Acad., DSc. (Bulgaria)
Vassil Sgurev, Acad., DSc. (Bulgaria)

- **Co-Chairs:**

Todor Stoilov, Prof., DSc. (Bulgaria)
Boris Rachev, Assoc. Prof., Ph.D. (Bulgaria)

- **Scientific Secretary:**

Dimo Dimov, Assoc. Prof., Ph.D. (Bulgaria)

- **Members:**

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Candelaria Hernández Goya (Spain)
Dana Petcu (Romania)
Danail Dochev (Bulgaria)
Dieter Wuttke (Germany)
Douglas Harms (United States)
Erika Asnina (Latvia)
Eugene Nickolov (Bulgaria)
Francisca Losavio (Venezuela)
Georgi Gluhchev (Bulgaria)
Georgi Todorov (Bulgaria)
Grisha Spasov (Bulgaria)
Gundars Alksnis (Latvia)
Hannu Jaakkola (Finland)
Howard Duncan (Ireland)
Iliya Georgiev (United States)

Ioannis Stamelos (Greece)
Ivan Jelinek (Czech Republic)
Janusz Jabłonowski (Poland)
John Galletly (United Kingdom)
Jordan Kolev (Bulgaria)
Joris Michaeli (Israel)
Jukka Teuhola (Finland)
Juliana Peneva (Bulgaria)
Karl Jones (United Kingdom)
Kostadin Kratchanov (Turkey)
Krassen Stefanov (Bulgaria)
Ladislav Hudec (Slovakia)
Leon Rothkrantz (Netherlands)
Leonid Kirilov (Bulgaria)
Leonid Rozenblyum (United States)
Lidiya Georgieva (Bulgaria)
Lyudmil Dakovski (Bulgaria)
Marco Porta (Italy)
Margarita Todorova (Bulgaria)
Marite Kirikova (Latvia)
Martin Llamas-Nistal (Spain)
Michael Vassilakopoulos (Greece)
Milena Dobreva (Malta)
Mirjana Ivanovic (Serbia)
Neli Maneva (Bulgaria)

Nicole Levy (France)
Nik Bessis (United Kingdom)
Novruz Allahverdi (Turkey)
Olegas Vasilecas (Lithuania)
Opher Etzion (Israel)
Peter Stanchev (United States)
Pino Caballero-Gil (Spain)
Radi Romansky (Bulgaria)
Radu Dobrin (Sweden)
Rebecca Bartlett (United Kingdom)

Stavros Nikolopoulos (Greece)
Steven Beaty (United States)
Stoicho Stoichev (Bulgaria)
Tadeusz Morzy (Poland)
Timos Sellis (Australia)
Tzvetomir Vassilev (Bulgaria)
Ville Leppänen (Finland)
Yannis Manolopoulos (Greece)
Yuri Rogozov (Russia)
Zarko Mijajlovic (Serbia)

♦ NATIONAL ORGANIZING COMMITTEE

• Co-Chairs:
Angel Smrikarov, Prof., Ph.D. (Bulgaria)

•Secretary:
Eugenia Dimitriva (Bulgaria)

• Members:
Stoyanka Smrikarova (Bulgaria)   Plamenka Borovska (Bulgaria)
Tzvetozar Georgiev (Bulgaria)   Grisha Spasov (Bulgaria)
Margarita Teodosieva (Bulgaria)   Nadejda Ruskova (Bulgaria)
Katalina Grigorova (Bulgaria)   Margarita Todorova (Bulgaria)
Yordan Kalmukov (Bulgaria)   Raicho Ilarionov (Bulgaria)
Irena Valova (Bulgaria)   Boyanka Zhelyazova (Bulgaria)

♦ TOPICS

1. Computer Systems (Hardware).

2. Computer Systems (Software).

3. Application Aspects of Computer Systems and Technologies.

4. Educational Aspects of Computer Systems and Technologies.

5. The youth and the ICT

6. Workshop on Biometrics

Friday 28th June 2013

09:00 – 14:30
In the new building, 2.109
Registration

15:00
New building, 2.101

OPENING

WELCOME

Chair: **Angel Smrikarov**

JOHN ATANASOFF
110 YEARS FROM THE BIRTH
BLAGOVEST SENDOV

PLENARY SESSION

Chair: **Todor Stoilov**

ANDRÁS BENCZÚR

Eötvös Loránd University
Department of Information Systems

Lecture on:
The Digital Universe – Information Theoretical Analyses

GALJA ANGELOVA

Institute of Information and Communication Technologies
Bulgarian Academy of Sciences, Bulgaria

Lecture on:
Automatic information extraction from patient records in Bulgarian Language

DISCUSSIONS

Coffee Break – Foyer

Industrial Session

A QoX Model for ETL Subsystems:
Theoretical and Industry Perspectives
Ivan Pavlov, Adastra Corp

DISCUSSIONS

17:30
Sightseeing of the UNIVERSITY of RUSE

19:30
Social Evening in the Restaurant "RIGA"
22 Pridunavski Blvd

Programme Summary

9:00 – 11:30	Session A1 **Operating Systems and Computer Networks** Number of papers: 7	Session B1 **Image Processing and Computer Vision** Number of papers: 8	Session C1 **Data, Data Mining, Data Representation and Knowledge Management** Number of papers: 8	Session D **The youth and the ICT** Number of papers: 4
11:30 – 12:00	Coffee break	Coffee break	Coffee break	Coffee break
12:00 – 13:30	Session A2 **Hardware Design and Modelling** Number of papers: 4 **Computer Application in the Industry** Number of papers: 2	Session B2 **Surveillance and Object Localization** Number of papers: 2 **Software Engineering** Number of papers: 2	Session C2 **Language Processing and Computer Linguistics** Number of papers: 2 **Data Encoding and Cryptography** Number of papers: 3	
13:30 – 14:30	Lunch	Lunch	Lunch	
14:30 – 16:30		Session B3 **Web Services, Cloud Computing and Distributed Systems** Number of papers: 6	Session C3 **Educational Aspects of Computer Technologies (e-Learning)** Number of papers: 6	

Session A1

Chair: **Bojan Cestnik**
Co-Chair: **Mitko Gospodinov**
Scientific Secretary: **Elitza Arsova**

Saturday, 29 June 2013
09:00 – 11:30
New building, Hall 2.113

Operating Systems and Computer Networks

1. **Implementation aspects of self-healing functionality in long term evolution (LTE) networks**
   Viljem Križman, Aram Karalič, Bojan Cestnik

2. **Implementing Port Security Feature Using SNMP Protocol**
   Delyan Genkov

3. **Simulation of fractal network teletraffic**
   Mitko Gospodinov

4. **Computer Modeling of the Throughput of a Crossbar Switch by PI-Patterns for Uniform Traffic with Variable Intensity**
   Tasho Tashev, Vladimir Monov

5. **Loading Test of Apache HTTP Server by video file and usage measurements of the hardware components**
   Stanislav Dimitrov, Todor Stoilov

6. **Reducer : A tool to reduce redundant Disk I/O**
   Suhas Aggarwal

7. **'N' Client Simulation Using User Mode Linux**
   Suhas Aggarwal

DISCUSSIONS

11:30 – 12:00
Coffee Break - Foyer

Session A2

Chair: **Bojan Cestnik**
Co-Chair: **Mitko Gospodinov**
Scientific Secretary: **Elitza Arsova**

Saturday, 29 June 2013
12:00 – 13:30
New building, Hall 2.113

Hardware Design and Modelling

1. **MMSoC: A Multi-Layer Multi-Core Storage-on-Chip Design for Systems with High Integration**
   Thomas Canhao Xu, Pasi Liljeberg, Juha Plosila, Hannu Tenhunen

2. **Optimized Multicore Architectures for Data Parallel Fast Fourier Transform**
   Thomas Canhao Xu, Tapio Pahikkala, Pasi Liljeberg, Juha Plosila, Hannu Tenhunen

3. **A program for an automatic PicoBlaze type embedded system generation**
   Vladimir Ivanov

4. **Optimization of Address-based Data Sorting Unit with External Memory Support**
   Dmitri Mihhailov, Artjem Rjabov, Valery Sklyarov, Iouliia Skliarova, Alexander Sudnitson

Computer Application in the Industry

1. **Performance Analysis of MQL Drilling Using Artificial Neural Network**
   Sona Azarrang, Hamid Baseri

2. **Scientific Software Tools for Machinery Vibration Diagnostic**
   Svetlin Stoyanov

DISCUSSIONS

13:30 – 14:30
Lunch

Session B1

Chair: **Virginio Cantoni**
Co-Chair: **Dimo Dimov**
Scientific Secretary: **Borislav Banchev**

Saturday, 29 June 2013
09:00 – 11:30
New building, Hall 2.114

Image Processing and Computer Vision

1. **Denoising of Electrocardiogram Data with Methods of Wavelet Transform**
   Galya Georgieva-Tsaneva, Krassimir Tcheshmedjiev

2. **QRS Detection Algorithm for long term Holter records**
   Galya Georgieva-Tsaneva

3. **Noncontact Automatic Heart Rate Analysis in Visible Spectrum by Specific Face Regions**
   Dragos Datcu, Marina Cidota, Stephan Luckosh, Leon Rothkrantz

4. **Emotion Recognition by Face Dynamics**
   Svetoslav Nedkov, Dimo Dimov

5. **Automated abrasion segmentation in medical images**
   Borislav Banchev

6. **Pixel-based Representation of Geometrical Distortions in a Camera/Projector Model**
   Hristian Rusev

7. **Applying a Process-Oriented Algorithm for development of Automatic Number Plate Recognition System**
   Atanas Atanassov

8. **Banner Positioning in the Masthead Area of Online Newspapers: an Eye Tracking Study**
   Virginio Cantoni, Marco Porta, Stefania Ricotti, Francesca Zanin

DISCUSSIONS

11:30 – 12:00
Coffee Break - Foyer

Session B2

Chair: **Virginio Cantoni**
Co-Chair: **Dimo Dimov**
Scientific Secretary: **Borislav Banchev**

Saturday, 29 June 2013
12:00 – 13:30
New building, Hall 2.114

Surveillance and Object Localization

1. **A Surveillance System of a Military Harbour Using an Automatic Identification System**
   Leon Rothkrantz, Krispin Scholte

2. **Dynamic indoor localization and awareness using sensor-networks**
   Leon Rothkrantz, Iulia Lefter

Software Engineering

1. **Towards a parallel debugging framework for the massively multi-threaded, step-synchronous REPLICA architecture**
   Jari-Matti Mäkelä, Ville Leppänen, Martti Forsell

2. **On Quick Comprehension and Assessment of Software**
   Cezary Bartoszuk, Robert Dabrowski, Krzysztof Stencel, Grzegorz Timoszuk

DISCUSSIONS

13:30 – 14:30
Lunch

Session B3

Chair: **Rastislav Szabo**
Co-Chair: **Aleksandar Dimov**
Scientific Secretary: **Nikolay Kostadinov**

Saturday, 29 June 2013
14:30 – 16:30
New building, Hall 2.114

Web Services, Cloud Computing and Distributed Systems

1. **Testing Web Service's Compositions Following TASSA Methodology**
   Denitsa Manova, Sylvia Ilieva, Dessislava Petrova-Antonova

2. **Software availability in the cloud**
   Tsanko Aleksandrov, Aleksandar Dimov

3. **A Methodology for Analyzing and Measuring Semantic Data Quality in Service Oriented Architectures**
   Plamen Petkov, Markus Helfert

4. **Identification of Vulnerable Parts of Web Applications Based on Anomaly Detection in HTTP**
   Rastislav Szabo, Ladislav Hudec

5. **An Algorithm Modelling Primary Copy Two-Phase Locking with Integrated Mechanism of Timestamps**
   Svetlana Vasileva, Lyubomir Gotcev

6. **Modelling of an Automatic Call Distributor in a Multi-site Call Centre**
   Nikolay Kostadinov

DISCUSSIONS

Session C1

Chair: **Nikitas Karanikolas**
Co-Chair: **Irina Nikolova**
Scientific Secretary: **Diana Grigorova**

Saturday, 29 June 2013
09:00 – 11:30
New building, Hall 2.104

Data, Data Mining, Data Representation and Knowledge Management

1. **Ontology structure evolution in a framework for building ontology based information systems**
   Samuil Nikolov

2. **A Constraint-based Approach for Analysing Financial Market Operations**
   Samuil Nikolov, Vladimir Nikolov,, Anatoliy Antonov

3. **Multifactor Modelling System with Cloud Based Pre-processing**
   Ventsislav Nikolov, Danko Naydenov

4. **Data PER Model**
   Hristo Tujarov,Stefan Kalchev, Vassil Milev

5. **Context-based ensemble model**
   Irina Nikolova

6. **Generation of Description Metadata for Video Files**
   Antonio Maratea, Alfredo Petrosino, Mario Manzo

7. **New Digital Fashion World**
   Detelin Luchev, Desislava Paneva-Marinova, Lilia Pavlova-Draganova, Radoslav Pavlov

8. **Predicting Newspaper Sales by Using Data Mining Techniques**
   Barış Akbaş, Dilek Karahoca, Adem Karahoca, Ali Güngör

DISCUSSIONS

11:30 – 12:00
Coffee Break - Foyer

Session C2

Chair: **Nikitas Karanikolas**
Co-Chair: **Irina Nikolova**
Scientific Secretary: **Diana Grigorova**

Saturday, 29 June 2013
12:00 – 13:30
New building, Hall 2.104

Language Processing and Computer Linguistics

1. **An Algorithm for Zero Pronoun Resolution in Bulgarian**
   Diana Grigorova

2. **A methodology for building simple but robust stemmers without language knowledge – Overview, data model and ranking algorithm**
   Nikitas N. Karanikolas

Data Encoding and Cryptography

1. **Watermarking Java Application Programs using the WaterRpg Dynamic Model**
   Ioannis Chionis, Maria Chroni, Stavros D. Nikolopoulos

2. **About Balance Property of the p-ary Generalized Self-Shrinking Generator Sequence**
   Antoniya Tasheva, Ognyan Nakov, Zhaneta Tasheva

3. **A Key Recovery Scheme**
   Suhas Aggarwal

DISCUSSIONS

13:30 – 14:30
Lunch

Session C3

Chair: **Iliya Georgiev**
Co-Chair: **Douglas Harms**
Scientific Secretary: **Galina Ivanova**

**Saturday, 29 June 2013
14:30 – 16:30
New building, Hall 2.104**

Educational Aspects of Computer Systems and Technologies (eLearning)

1. **Teaching Computational Thinking for High Performance Programming**
   Iliya Georgiev, Ivo Georgiev

2. **A Preliminary Analysis of the Effectiveness of Myro/Java In Computer Science 1**
   Douglas Harms

3. **TEL in Teaching and Learning Programming – International Experience**
   Mirjana Ivanović, Ana Madevska Bogdanova, Boris Milašinović, Miloš Savić, Klaus Bothe

4. **Supporting Adaptive E-Learning with an Open-source Learning Management System**
   Hristo Indzhov, Polina Zhelyazkova, George Totkov

5. **NFC-based Pervasive Learning Service for Children**
   Rosen Ivanov

6. **3D Virtual Learning and Measuring Drill Tools**
   Galina Ivanova, Aleksandar Ivanov, Kaloyan Kolarov

DISCUSSIONS

Session D
The youth and the ICT

Chair: **Peter Kenderov**
Co-Chair: **Anelia Ivanova**
Scientific Secretary: **Suzan Feimova**

Saturday, 29 June 2013
09:00 – 11:00
New building, Hall 2.105

1. **Augmented Reality Furniture 3D**
   Atanas Atanasov, Vasil Vodenicharov, Suzan Feimova

2. **Analysis and recognition of human gestures with statistical and distance algorithms**
   Nikolay Dakov

3. **Optimizations using segment tree structures**
   Vasil Pashov

4. **A Proposal for Electronic Currency with Inflation**
   Hristo Stoyanov

DISCUSSIONS

11:30 – 12:00
Coffee Break - Foyer

Saturday 29th June 2013
16:30
New building, 2.101

The CHAIRS
of the PROGRAMME COMMITTEE
and
the ORGANIZING COMMITTEE
will bestow
a CRYSTAL PRIZE
to the authors of the best papers.

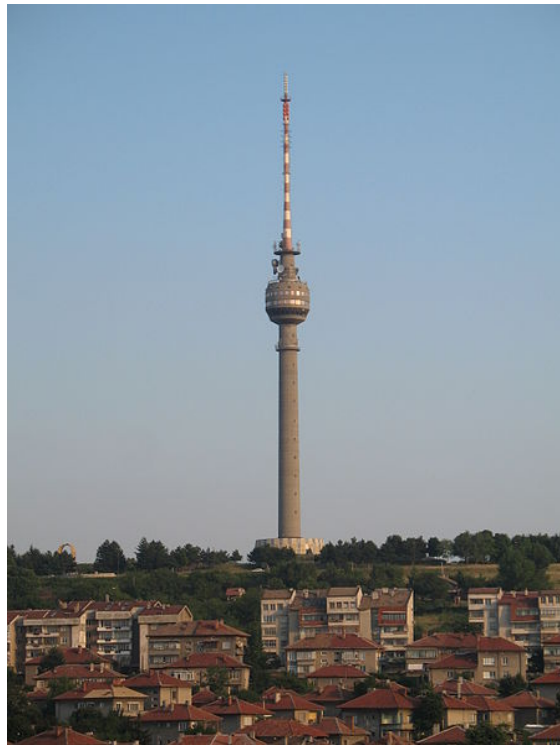**Saturday 29rd June 2013**
17:00
New building, 2.101

Meeting
of the PROGRAMME COMMITTEE and ORGANIZING COMMITTEE
and the chairs of each sections
of the CompSysTech'13

R U S E

RIGA Hotel