ADVANCED COMPUTER SYSTEMS
October 22-24, 2014, Międzyzdroje, Poland

Conference Programme

Międzyzdroje, October 22-24, 2014
LOCATION
19\textsuperscript{th} International Multi-Conference on Advanced Computer Systems ACS 2014 will be held on October 22-24, 2014, in Międzyzdroje, Poland.

Detailed address:
HOTEL AMBER BALTIC
PL 72-500 Międzyzdroje
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THE CURRENT INFORMATION (UP TO October 17\textsuperscript{TH})
Faculty of Computer Science and Information Systems
West Pomeranian University of Technology
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SECRETARIAT LOCATION (ON October 22-24, 2014)
HOTEL AMBER BALTIC, PL 72-500 Międzyzdroje, Promenada Gwiazd Str. 1, tel. (+48 91) 322 85 00
# Time schedule of ACS 2014

## First Day

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<th><strong>WEDNESDAY, OCTOBER 22, 2014</strong></th>
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<tr>
<td>9:00-15:00</td>
<td>Registration</td>
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</table>
| 11:00-12:15                   | Welcome Greetings: Rector, Honorary Chairs, Dean Keynotes:  
Gisella Facchinetti (Italy) *A parametric interval approximation of fuzzy numbers*  
Arkadiusz ORŁOWSKI (Poland) *Visual cryptography and its nontrivial applications* |  |
| 12:15-12:30                   | Tea/Coffee Break |  |
| 12:30-14:30                   | Oral Presentations I: Artificial Intelligence |  |
| 14:30-15:15                   | Lunch |  |
| 15:15-17:15                   | Oral Presentations II: Artificial Intelligence and Software Technologies |  |
| 19:00-23:00                   | Fresh-Air Get-together Meeting and Bowling Contest |  |
## Time schedule of ACS 2014

### Second Day

**THURSDAY OCTOBER 23, 2014**

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<tr>
<td>9:00-15:00</td>
<td>Registration</td>
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<tr>
<td>9:00-9:30</td>
<td>Keynote</td>
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<tr>
<td></td>
<td>Larysa GLOBA (Ukraine) <em>Based on Force-Directed Algorithms Method for Metagrap Visualization</em></td>
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<tr>
<td>9:30-11:30</td>
<td>Oral Presentations III: Software Technologies</td>
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<tr>
<td>11:30-11:45</td>
<td>Tea/Coffee Break</td>
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<tr>
<td>11:45-13:45</td>
<td>Oral Presentations IV: Design of Information Systems</td>
</tr>
<tr>
<td>13:45-15:15</td>
<td>Lunch</td>
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<tr>
<td>15:15-15:45</td>
<td>Keynote</td>
</tr>
<tr>
<td></td>
<td>Jacek POMYKAŁA (Poland) <em>Derandomization of selected cryptographic systems and related mathematical problems</em></td>
</tr>
<tr>
<td>15:45-17:45</td>
<td>Oral Presentations V: Information Technology Security and Design of Information Systems</td>
</tr>
<tr>
<td>19:00–23:00</td>
<td>Conference Banquette</td>
</tr>
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### Time schedule of ACS 2014

**Third Day**

**Friday, October 24, 2014**

<table>
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<tr>
<th>Time</th>
<th>Event</th>
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<tr>
<td>9:00-9:30</td>
<td>Keynote&lt;br&gt;Akira IMADA (Belarus) <em>What is machine intelligence? - A case study: Stock market forecasting agents</em></td>
</tr>
<tr>
<td>9:30-11:30</td>
<td>Oral Presentations VI: Русскоязычная секция конференции (Russian-language Conference Section)</td>
</tr>
<tr>
<td>11:30-11:45</td>
<td>Tea/Coffee Break</td>
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<tr>
<td>11:45-13:45</td>
<td>Oral Presentations VII: Multimedia Systems</td>
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<tr>
<td>13:45 – 14:15</td>
<td>Concluding Meeting</td>
</tr>
<tr>
<td>14:15-15:45</td>
<td>Lunch</td>
</tr>
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Wednesday 22 Oct 2014

Registration, 09:00-15:00.

Room: Hotel Hall.
Chaired by Sylwia Hardej

Welcome Greetings: Rector, Honorary Chairs, Dean,
11:00-11:15

Room: Kalman Room.
Chaired by Jerzy Pejaś

Keynotes, 11:15-12:15

Room: Kalman Room.
Chaired by Jerzy Pejaś

1. A parametric interval approximation of fuzzy numbers,
   Luca Anzilli (University of Salento), Gisella Facchinetti (University of Salento)
2. Visual cryptography and its nontrivial applications,
   Arkadiusz Orlowski (SGGW in Warsaw)

Tea/Coffee Break, 12:15-12:30

Room: Hall.
Chaired by Sylwia Hardej
Wednesday 22 Oct 2014

Oral Presentations I: Artificial Intelligence

12:30-14:30

Room: Kalman Room.
Chaired by prof. Gisela Facchinetti (Italy) and prof. Andrzej Piegat (Poland)

1. Boosted Classifiers for Antitank Mine Detection in C-Scans from Ground Penetrating Radar,
   Przemysław Klesk (West Pomeranian University of Technology, Szczecin), Mariusz Kapruziak (West Pomeranian University of Technology, Szczecin), Bogdan Olech (West Pomeranian University of Technology, Szczecin)

2. Application of mini-models to the interval information granules processing,
   Marcin Pluciński (West Pomeranian University of Technology, Faculty of Computer Science and Information Technology)

3. The comparison of ICA algorithms for audio signals separation,
   Paweł Górski (West Pomeranian University of Technology)

4. Sensitivity of Nuclear-Cytoplasmic Index and Nuclear-Cytoplasmic Relation in Computer Aided Cytoscreening Diagnosis,
   Dorota Oszutowszka-Mazurek (ZUT w Szczecinie), Przemysław Mazurek (ZUT w Szczecinie), Konrad Derda (ZUT w Szczecinie), Kinga Sycz (Samodzielny Publiczny Wojewódzki Szpital Zespolony w Szczecinie), Grażyna Waker-Wójciuk (Samodzielny Publiczny Wojewódzki Szpital Zespolony w Szczecinie)

5. Application of the horizontal membership function to the uncertain displacement calculation of a composite massless rod under a tensile load,
   Karina Tomaszewska (West Pomeranian University of Technology in Szczecin), Andrzej Piegat (West Pomeranian University of Technology in Szczecin)

6. Multi-agent processes analysis system in task of prediction,
   Michał Zabłocki (West Pomeranian University of Technology in Szczecin)

Lunch, 14:30-15:15

Room: Canteen.
Chaired by Sylwia Hardej
Wednesday 22 Oct 2014

Oral Presentations II: Artificial Intelligence and Software Technologies, 15:15-17:15

Room: Kalman Room.
Chaired by prof. Akira Imada (Bielarus) and prof. Przemysław Klęsk (Poland)

1. Application of the reinforced learning for selecting fuzzy rules representing the behavior policy of units in RTS-type games,
   Marcin Pluciński (West Pomeranian University of Technology, Faculty of Computer Science and Information Technology), Maciej Kutyło (West Pomeranian University of Technology, Faculty of Computer Science and Information Technology), Magdalena Laskowska (West Pomeranian University of Technology, Faculty of Computer Science and Information Technology)

2. Comparison between mini-models based on multidimensional polytopes and k-nearest neighbor method: case study of 4D and 5D problems,
   Marcin Pietrzykowski (West Pomeranian University of Technology in Szczecin)

3. Syntax-based distance for multilevel multidimensional decision rules,
   Agnieszka Komorowska (WEiTI PW)

4. Parallel computing techniques on enhancement of thermal-hydraulic analysis of fluid flow networked systems,
   Mykhaylo Fedorov (West Pomeranian University of Technology in Szczecin)

5. Perfectly nested loop tiling transformations based on the transitive closure of the program dependence graph,
   Włodzimierz Bielecki (West Pomeranian University of Technology in Szczecin), Marek Palkowski (West Pomeranian University of Technology in Szczecin)

6. Sentence sentiment classification using fuzzy wordmatching combined with fuzzy sentiment classifier,
   Marcin Pietras (West Pomeranian University of Technology)
Wednesday 22 Oct 2014

Poster Session, 17:15-18:15

Room: Kalman Room.  
Chaired by prof. Gisella Facchinetti (Italy) and prof. Włodzimierz Bielecki

1. E-book reader application driven by commands provided by a brain-computer interface based on motor imagery paradigm,  
   *Izabela Rejer (West Pomeranian University of Technology in Szczecin), Andrzej Klimek (West Pomeranian University of Technology in Szczecin)*

2. Anticollision Manoeuvre Optimization in the NAVDEC System,  
   *Jolanta Koszelew (Bialystok University of Technology), Piotr Wolejsza (Maritime University Szczecin)*

3. Binarization of Document Images Using the Modified Local-Global Otsu and Kapur Algorithms,  
   *Piotr Lech (ZUT Szczecin), Krzysztof Okarma (West Pomeranian University of Technology), Dominik Wojnar (West Pomeranian University of Technology)*

4. Classic genetic algorithm vs. genetic algorithm with aggressive mutation for feature selection for a brain-computer interface,  
   *Krzysztof Lorenz (ZUT w Szczecinie), Izabela Rejer (ZUT w Szczecinie)*

5. Small-Size Skin Features for Motion Tracking,  
   *Robert Krupiński (West Pomeranian University of Technology), Przemysław Mazurek (West Pomeranian University of Technology), Konrad Derda (West Pomeranian University of Technology)*

6. Statistical models for the estimation of execution time of coarse-grained OpenMP programs,  
   *Agnieszka Kamińska (West Pomeranian University of Technology in Szczecin), Włodzimierz Bielecki (West Pomeranian University of Technology in Szczecin)*

7. A Framework to COTS Component Selection and Evaluation Processes,  
   *Agnieszka Konys (ZUT, Szczecin)*

8. Implementation of Pairing-Based Cryptographic Trust Infrastructure in Mobile Environment,  
   *Jerzy Pejaś (West Pomeranian University of Technology), Tomasz Hyla (West Pomeranian University of Technology)*

9. Road Signs Recognition with Two-Dimensional Hidden Markov Models,  
   *Janusz Bobulski (Czestochowa University of Tech)*
Wednesday 22 Oct 2014

Poster Session, 17:15-18:15

**Room**: Kalman Room.

Chaired by prof. Gisella Facchinetti (Italy) and prof. Włodzimierz Bielecki

10. Parallel generator of q-valued pseudorandom sequences based on arithmetic polynomials, 
   *Oleg Finko (Kuban State Technological University, Krasnodar), Dmitriy Samoylenko (Kuban State Technological University, Krasnodar), Sergey Dichenko (Kuban State Technological University, Krasnodar), Nikolay Eliseev (Kuban State Technological University, Krasnodar)*

11. Secure pseudo-random linear binary sequences generators based on arithmetic polynomials, 
   *Oleg Finko (Kuban State Technological University, Krasnodar), Sergey Dichenko (Kuban State Technological University, Krasnodar)*

12. A unified approach for developing rationalized algorithms for hypercomplex number multiplication, 
   *Aleksandr Cariow (West Pomeranian University of Technology), Galina Cariowa (West Pomeranian University of Technology)*

13. Model of Collaborative Data Exchange for Inland Mobile Navigation, 
   *Tomasz Hyla (West Pomeranian University of Technology), Natalia Wawrzyniak (Maritime University of Szczecin), Witold Kazimierski (Maritime University of Szczecin)*

14. Monte Carlo Based Reduction of Image Resolution in View of No-Reference Image Quality Assessment, 
   *Krzysztof Okarma (West Pomeranian University of Technology), Piotr Lech (West Pomeranian University of Technology), Andrzej Polakowski (ZUT Szczecin), Sylwia Gajda (West Pomeranian University of Technology)*

15. Computer analysis of the noise component in the singing voice for assessing the quality of singing, 
   *Edward Półrolniczak (West Pomeranian University of Technology), Michał Kramarczyk (West Pomeranian University of Technology)*

16. Application of Selected Geometrical 3D Object Description Algorithms to the Problem of Model Retrieval, 
   *Dariusz Frejlichowski (West Pomeranian University of Technology, Szczecin)*

17. Automatic Extraction of Parallelism for Mobile Computing, 
   *Marek Palkowski (West Pomeranian University of Technology)*
Fresh-Air Get-together Meeting, 19:00-23:00.

**Room:** Outside the Amber Baltic Hotel.
Chaired by Sylwia Hardej
Thursday 23 Oct 2014

Keynote, 09:00-09:30

Room: Kalman Room.
Chaired by Jerzy Pejaś

1. Based on Force-Directed Algorithms Method for Metagraph Visualization,
   Larysa Globa (NTUU), Maksym Ternovoy (NTUU), Olena Shtogrina (NTUU),
   Oleksandra Kryvenko (NTUU)

Oral Presentations III: Software Technologies

09:30-11:30

Room: Kalman Room.
Chaired by prof. Larysa Globa (Ukraine) and prof. Walery Rogoza (Poland)

1. Structural Analysis of Singularly Perturbed State Models,
   Walery Rogoza (West Pomeranian University of Technology)
2. Towards Generalization of Mutant Clustering Results in Mutation Testing,
   Anna Derezinska (Inst. of Computer Science, Warsaw University of Technology)
3. TRACO Parallelizing Compiler,
   Marek Palkowski (West Pomeranian University of Technology), Wlodzimierz Bielecki
   (West Pomeranian University of Technology)
4. Energy-Efficient Network Services as Smart Grid Issue,
   Andriy Luntovskyy (Univ. of Coop. Education BA DD)
5. Hybridization of the optimization process as an alternative way to find approximate
   solutions for NP-hard problems,
   Leonard Rozenberg (West Pomeranian University of Technology in Szczecin), Robert
   Rychcicki (West Pomeranian University of Technology in Szczecin)
6. DevOntoCreator: an ontology-based approach to software engineering,
   Katarzyna Dąbrowska-Kubik ( WUT Inst. of Computer Science)
Thursday 23 Oct 2014
Tea/Coffee Break, 11:30-11:45

Room: Hall.
Chaired by Sylwia Hardej
Thursday 23 Oct 2014

Oral Presentations IV: Design of Information Systems

11:45-13:45

Room: Kalman Room
Chaired by prof. Dariusz Frejlichowski (Poland) and dr Paweł Forczmański (Poland)

1. The Sufficient Criteria For Consistent Modelling Of The Use Case Realization Diagrams With A New Functional-Structure-Behaviour UML Diagram,
   Stanislaw Niepostyn (Politechnika Warszawska)
2. Sushi: A Lightweight Distributed Image Storage System for Mobile and Web Services,
   Kamoliddin Mavlono (Graduate School of Science and Engineering, Ehime University),
   Yoshinobu Higami (Graduate School of Science and Engineering, Ehime University),
   Shin-ya Kobayashi (Graduate School of Science and Engineering, Ehime University)
3. The Jitter Use to Reduce EMI on the Power Lines for Multi-Core Processors,
   Leonard Rozenberg (West Pomeranian University of Technology in Szczecin), Tomasz Król (West Pomeranian University of Technology in Szczecin), Michał Twardochleb (West Pomeranian University of Technology in Szczecin)
4. Knowledge-based Approach to COTS Software Selection Processes,
   Agnieszka Konys (West Pomeranian University of Technology)
5. Fast computation of the SLTF transform,
   Remigiusz Końca (West Pomeranian University of Technology)
6. Method of static classifiers selection using the weights of base classifiers,
   Robert Burduk (Wroclaw University of Technology)

Lunch, 13:45-15:15

Room: Canteen
Chaired by Sylwia Hardej
Thursday 23 Oct 2014

Keynote, 15:15-15:45

Room: Kalman Room
Chaired by Jerzy Pejaś

1. Derandomization of selected cryptographic systems and related mathematical problems,
   Jacek POMYKAŁA (Poland)

Oral Presentations V: Information Technology Security, 15:45-17:45

Room: Kalman Room
Chaired by prof. Jacek Pomykała (Poland) and dr hab. Dariusz Frejlichowski (Poland)

1. ProToc - an universal language for security protocols specification,
   Sabina Szymoniak (Politechnika Częstochowska), Andrzej Grosser (Politechnika Częstochowska), Mirosław Kurkowski (Politechnika Częstochowska), Jacek Piątkowski (Politechnika Częstochowska)
2. Parallelization of Block Encryption Algorithm Based on Piecewise Nonlinear Map,
   Dariusz Burak (West Pomeranian University of Technology)
3. Statistical properties analysis of key schedule modification in block cipher PP-1,
   Michał Apolinarski (Politechnika Poznańska)
4. Fault Detection in PP-2 Symmetric Block Cipher,
   Ewa Idzikowska (Poznań University of Technology)
5. HoneyPot systems in practice,
   Krzysztof Cabaj (Institute of Computer Science WUT), Piotr Gawkowski (Institute of Computer Science)
6. Parallel Byzantine Fault Tolerance,
   Maciej Zbierski (Warsaw University of Technology)
Conference Banquette, 19:00-23:00

Room: Hotel Restaurant
Chaired by Sylwia Hardej

Friday 24 Oct 2014

Keynote, 09:00-09:30

Room: Kalman Room
Chaired by Jerzy Pejaś

1. What is machine intelligence? - A case study: Stock market forecasting agents, Akira IMADA (Belarus)
Friday 24 Oct 2014

Oral Presentations VI: Russian-language Conference
Section, 09:30-11:30

Room: Kalman Room.
Chaired by prof. Larysa Globa (Ukraine) and prof. Aleksander Cariow (Poland)

1. Detection accuracy of the temporary state of complex signals using phase-frequency tracking methods with equilibrium and non-equilibrium processing,
   Alexander Kochegurov (National Research Tomsk Polytechnic University), Elena Kochegurova (National Research Tomsk Polytechnic University), Natalya Kupina (National Research Tomsk Polytechnic University)

2. The formal model of data mining algorithms for parallelize algorithms,
   Ivan Kholod (Saint Petersburg Electrotechnical University "LETI"), Zaynidin Karshiyev (Saint Petersburg Electrotechnical University "LETI")

3. The concept of robotization in conventional systemscreation applied to the preliminary aircraft design,
   Nikolay Borgest (Samara st. aerosp. university), Maksim Korovin (Samara st. aerosp. university), Alexey Gromov (Samara st. aerosp. university), Andrey Gromov (Samara st. aerosp. university)

4. Digital filter bank implementation in hydroacoustic monitoring tasks,
   Dmitry Kaplun (Saint Petersburg Electrotechnical University ), Dmitriy Klionskiy (Saint Petersburg Electrotechnical University ), Alexander Voznesenskiy (Saint Petersburg Electrotechnical University ), Vyacheslav Gulvanskiy (Saint Petersburg Electrotechnical University, Senior researcher)

5. On the multiplication of biquaternions,
   Aleksandr Cariow (West Pomeranian University of Technology), Galina Cariowa (West Pomeranian University of Technology)

6. Increasing web services discovery relevancy in the multi-ontological environment,
   Larysa Globa (NTUU), Mykhailo Kovalskyi (student), Alexander Stryzhak (Researcher)

7. Modern Approach to Web Service Composition,
   Dmytro Pukhkaiev (NTUU ), Oleksii Oleksenko (NTUU ), Tetiana Kot (NTUU ), Larysa Globa (NTUU), Alexander Schill (TU Dresden)
Friday 24 Oct 2014

Tea/Coffee Break, 11:30-11:45

Room: Hall.
Chaired by Sylwia Hardej
Friday 24 Oct 2014

Oral Presentations VII: Multimedia Systems

11:45-13:45

Room: Kalman Room
Chaired by prof. Dariusz Frejlichowski

1. Verification of Identity Based on Palm Vein and Palm-Print,
   Mariusz Kubanek (Czestochowa University of Technology), Dorota Smorawa
   (Czestochowa University of Technology)
2. A Study on Various Dimensionality Reduction Techniques Applied in the General Shape
   Analysis,
   Katarzyna Gościewska (West Pomeranian University of Technology, Szczecin), Dariusz
   Frejlichowski (West Pomeranian University of Technology, Szczecin)
3. Video Stream Analysis for Fish Detection and Classification,
   Paweł Forczmanski (WI ZUT), Adam Nowosielski (WI ZUT), Paweł Marczeski (WI ZUT)
4. Algorithmic composition transformational-generative system for background music
   generation,
   Łukasz Mazurowski (West Pomeranian University of Technology)
5. Mechanisms for increasing the efficiency of holistic face recognition systems,
   Adam Nowosielski (WI ZUT)
6. A Study on Various Shape Descriptors and Matching Methods Applied in the General
   Shape Analysis,
   Dariusz Frejlichowski (West Pomeranian University of Technology, Szczecin), Katarzyna
   Gościewska (West Pomeranian University of Technology)

Concluding Meeting, 13:45-14:15

Room: Kalman Room.
Chaired by Jerzy Pejaś

Lunch, 14:15-15:45

Room: Canteen
Chaired by Sylwia Hardej