



KES 2014

18th International Conference on Knowledge-Based and Intelligent Information & Engineering Systems

15-17 September 2014
Gdynia, Poland



CONFERENCE PROGRAMME



Contents

Welcome Message 2

Conference Chairs 3

Keynote Speakers 4

Conference Venue 6

Programme Overview 8

Detailed Programme 11

Social Events 25

Additional Information 27

About the Tri-City 28

Welcome Message

Welcome to the Eighteenth KES International Conference. The conference is organized by Gdynia Maritime University in Poland with KES International and in cooperation with Pomeranian Science and Technology Park in Gdynia, Poland.

The main aim of the KES conferences is to provide a forum for the dissemination of research accomplishments and to provide an internationally respected forum for scientific research in the technologies and applications of intelligent information and knowledge-based systems.

The conference attracted a substantial number of researchers and practitioners from all over the world who submitted their papers for 11 main tracks and numerous special sessions on specific topics. Accepted and presented papers highlight the new trends and challenge of intelligent and knowledge-based systems. Each paper was peer reviewed by at least two members of the International Program Committee and International Reviewer Board. Out of a large number of submissions, only 186 best papers have been selected for oral presentation and publication in the KES 2014 proceedings.

We would like to express our sincere thanks to the Honorary Patron: Mayor of Gdynia, Dr. Wojciech Szczurek. Our special gratitude goes to the Honorary Chairs, Prof. Janusz Kacprzyk, Polish Academy of Sciences, Poland and Prof. Lakhmi C. Jain, University of South Australia, Australia, for their support. We also would like to express our thanks to the Keynote Speakers - Prof. Ernesto Damiani, Dr. Ulle Endriss, Prof. Bogdan Gabrys, Prof. Ngoc Thanh Nguyen and Prof. Petra Perner. We also thank co-organizer Pomeranian Science and Technology Park in Gdynia, Poland, for helping to host the event.

Our special thanks go to the Local Organizing Committee. Thanks are due to the Programme Co-chairs, General Track Programme Chairs, Special Sessions Programme Chair, all Programme and Reviewer Committee members and all the additional reviewers for their valuable efforts in the review process which helped us to guarantee the highest quality of the selected papers for the conference. We cordially thank the organizers and chairs of special sessions which essentially contribute to the success of the conference.

Finally, we cordially thank all the authors, presenters and delegates for their valuable contribution to this successful event. The conference would not have been possible without their support.

We hope and intend that KE S2014 significantly contributes to fulfillment of the academic excellence and leads to even greater successes of KES events in the future.

*Piotr Jędrzejowicz
Lakhmi C. Jain
Robert J. Howlett
Ireneusz Czarnowski*

Honorary Patronage



Dr. Wojciech Szczurek
Lord Mayor of the City of Gdynia

Honorary Chairs



Prof. Janusz Kacprzyk
Polish Academy of Sciences, Poland



Prof. Lakhmi C. Jain
University of South Australia, Australia

General Chair



Prof. Piotr Jędrzejowicz
Gdynia Maritime University, Poland

Executive Chair



Prof. Robert J. Howlett
University of Bournemouth, UK
Executive Chair KES International

Keynote Speakers



Prof. Ernesto Damiani
University of Milan, Italy
Speech Title: Process Analysis Meets Big Data



Dr. Ulle Endriss
University of Amsterdam, The Netherlands
Speech Title: Collective Annotation: From
Crowdsourcing to Social Choice



Prof. Bogdan Gabrys
Bournemouth University, UK
Speech Title: Robust Adaptive Predictive Modeling
and Data Deluge



Prof. Ngoc Thanh Nguyen
Wroclaw University of Technology, Poland
Speech Title: Processing Inconsistency in
Determining Knowledge of a Collective



Prof. Petra Perner
Institute of Computer Vision and Applied Computer
Sciences, Germany

Speech Title: Mining Big and Sparse Data by Case-
Based Reasoning

Programme Chairs

Ireneusz Czarnowski, Gdynia Maritime University, Poland
Cecilia Zanni-Merk, National Institute of Applied Science, France
Edward Szczerbicki, University of Newcastle, Australia

General Track Programme Chairs

Ireneusz Czarnowski, Gdynia Maritime University, Poland
Dariusz Barbuca, Gdynia Maritime University, Poland

Special Sessions Programme Chair

Cecilia Zanni-Merk, National Institute of Applied Science, France

Local Organizing Chair

Dariusz Barbuca, Gdynia Maritime University, Poland

Publicity Chair

Izabela Wierzbowska, Gdynia Maritime University, Poland
Ewa Ratajczak-Ropel, Gdynia Maritime University, Poland

KES Conference Series

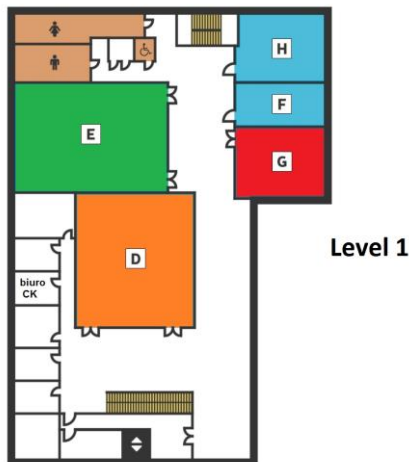
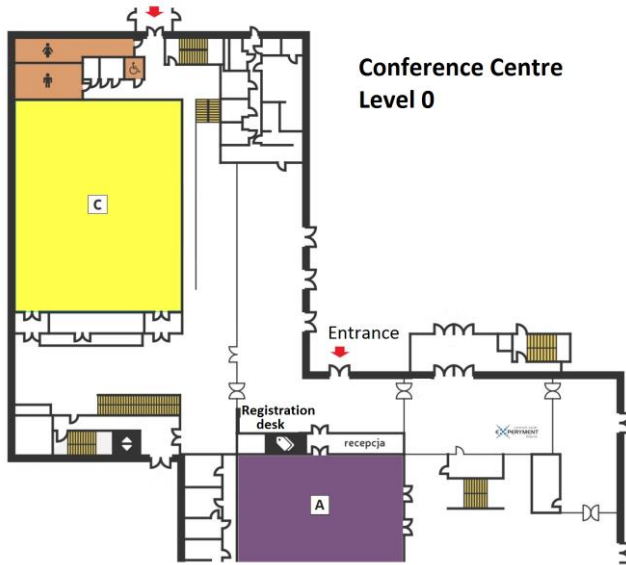
KES 2014 is part of the KES Conference Series

KES International

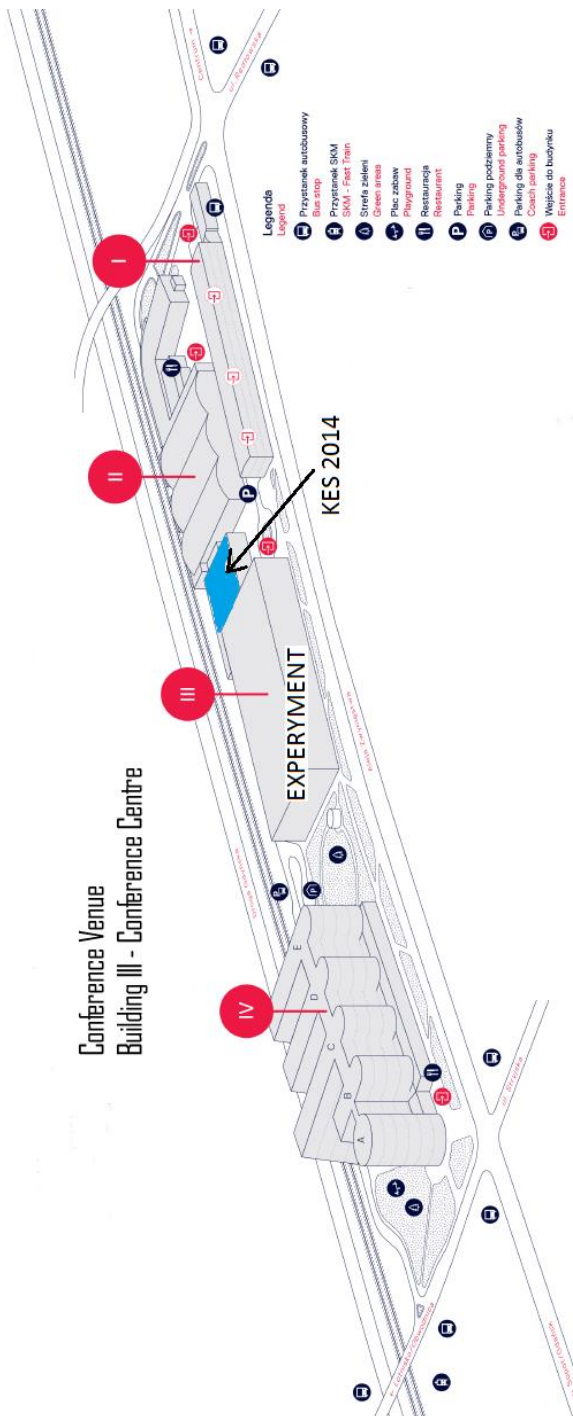
The organization and operation of KES 2014 is the responsibility of KES International

Conference Venue

Pomeranian Science and Technology Park in Gdynia
(Pomorski Park Naukowo-Technologiczny w Gdyni)
Aleja Zwyciestwa 96/98
81 - 451 Gdynia, Poland



Conference Venue
 Building III - Conference Centre



Programme Overview

14 September 2014 (Sunday)

17:00-19:00
Registration

15 September 2014 (Monday)

	Room C	Room D	Room E	Room G	Room H
07:30-17:00	Registration				
08:45-09:15	Opening ceremony				
09:15-10:15	<p style="text-align: center;">Mining Big and Sparse Data by Case-Based Reasoning Prof. Petra Perner Chair: Prof. Gloria Phillips-Wren Room C</p>				
10:15-10:30	Group photo session				
10:30-11:00	Coffee break				
11:00-12:00	G11: Intelligent Systems Applications and Miscellaneous Topics	G02: Nature Inspired Methods and Optimization	G01: Artificial Neural Networks and Machine Learning	IS01: Knowledge-based Learning and Education Support System: Design and Function	IS02: Security Engineering for Knowledge-based & Intelligent Systems & Applications
12:00-12:10	Short break				
12:10-13:20	G06: Web Intelligence IS31: Intelligent Network and Service	G02: Nature Inspired Methods and Optimization	G05: Knowledge Discovery and Data Mining	IS28: Data Science for Big Data	IS16: Application of Semantic Technologies to Decision Making
13:20-14:20	Lunch				
14:20-15:20	<p style="text-align: center;">Processing Inconsistency in Determining Knowledge of a Collective Prof. Ngoc Thanh Nguyen Chair: Prof. Colette Faucher Room C</p>				
15:20-15:30	Short break				
15:30-16:40	G11: Intelligent Systems Applications and Miscellaneous Topics	G05: Knowledge Discovery and Data Mining	IS13: Modelling with Qualitative and Quantitative Pairwise Comparisons	IS28: Data Science for Big Data IS08: Recent Advances in Knowledge Engineering and Soft Data Paradigms	IS24: Immunity-Based Systems: Resilient Computing IS10: Culturally-Aware AI Systems
16:40-17:00	Coffee break				
17:00-18:15	G04: Agent and Multi-Agent Systems	IS01: Knowledge-based Learning and Education Support System: Design and Function	IS13: Modelling with Qualitative and Quantitative Pairwise Comparisons	IS30: Artificial Intelligence Methods in Optimization, Scheduling and Planning	IS09: Innovation in Automation and Autonomy using Soft Computing Techniques
19:30-21:30	Welcome Reception				

16 September 2014 (Tuesday)

	Room C	Room D	Room E	Room G	Room H
08:00-17:00	Registration				
08:30-10:00	G11: Intelligent Systems Applications and Miscellaneous Topics	G03: Knowledge Based and Expert Systems	IS32: Web and Social Intelligence for Supporting Creative Human Activities	IS31: Intelligent Network and Service	IS29: Human Factors for Communication & Intelligent Systems
10:00-10:30	Coffee break				
10:30-11:30	<p style="text-align: center;">Plenary session Collective Annotation: From Crowdsourcing to Social Choice Dr. Ulle Endriss Chair: Prof. Edward Szcerbicki Room C</p>				
11:30-11:40	Short break				
11:40-13:00	G08: Knowledge Management	G10: E-Learning, E-Business and E-Commerce	IS17: Knowledge-Based Intelligent System and Application	IS06: Chance Discovery and Market of Data	G09: Intelligent Vision, Image Processing and Signal Processing IS03: Advances in Visual Intelligent Systems
13:00-14:00	Lunch				
14:00-15:00	<p style="text-align: center;">Plenary session Process Analysis Meets Big Data Prof. Ernesto Damiani Chair: Prof Margarita Favorskaya Room C</p>				
15:00-15:20	Coffee break				
15:20-17:10	G11: Intelligent Systems Applications and Miscellaneous Topics	G03: Knowledge Based and Expert Systems	G05: Knowledge Discovery and Data Mining	IS12: Intelligent Data Analysis in Applications	IS24: Immunity-Based Systems: Resilient Computing
19:00-22:00	Conference dinner				

17 September 2014 (Wednesday)

	Room C	Room D	Room E	Room G	Room H
08:00-14:00	Registration				
08:30-10:00	G07: Natural Language Processing	IS27: Complex systems	IS19: Skill Acquisition and Ubiquitous Human Computer Interaction	IS05: Knowledge-Based Systems for e-Business	IS18: E-learning as Cooperation Among Higher Education Institutions
10:00-10:30	Coffee break				
10:30-11:30	<p style="text-align: center;">Plenary session Robust Adaptive Predictive Modeling and Data Deluge Prof. Bogdan Gabrys Chair: Prof. Ignac Lovrek Room C</p>				
11:30-11:40	Short break				
11:40-13:00	G07: Natural Language Processing	IS33: Knowledge Sharing Network IS07: Intelligent Human-Computer Interaction	IS19: Skill Acquisition and Ubiquitous Human Computer Interaction	IS05: Knowledge-Based Systems for e-Business	ISRP-14: Intelligent Systems Research Progress Workshop
13:00-13:30	Closing ceremony				
13:30-14:30	Lunch				
14:30-20:00	Excursion (optional)				

Detailed Programme

14 September 2014 (Sunday)

17:00-19:00 - Registration

15 September 2014 (Monday)

7:30-17:00 - Registration

8:45-9:15 - Opening ceremony

9:15-10:15 **Plenary session**
Mining Big and Sparse Data by Case-Based Reasoning
Prof. Petra Perner
Chair: Prof. Gloria Phillips-Wren
Room C

10:15-10:30 – Group photo session

10:30-11:00 – Coffee break

11:00-12:00 – Parallel Sessions

General Track - Room C

G11: Intelligent Systems Applications and Miscellaneous Topics (part 1)

Chair: Carlos Toro

1. Short term electricity forecasting using individual smart meter data
Krzysztof Gajowniczek, Tomasz Ząbkowski
2. A smart experience-based knowledge analysis system (SEKAS)
Peng Wang, Cesar Sanin, Edward Szczerbicki
3. Method for suggesting suitable location-words for demand sentences
Misako Imono, Eriko Yoshimura, Seiji Tsuchiya, Hirokazu Watabe

General Track - Room D

G02 - Nature Inspired Methods and Optimization (part 1)

Chair: Urszula Boryczka

1. Exploration of multi-objective tradeoff during high level synthesis using bacterial chemotaxis and dispersal
Anirban Sengupta, Saumya Bhadauria
2. Construction of data aggregation tree for multi-objectives in wireless sensor networks through jump particle swarm optimization
Yao Lua, Jianping Chen, Ioan Comsa, Pierre Kuonen, Beat Hirsbrunner
3. Ant colony optimization algorithm applied to ship steering control
Miroslaw Tomera

General Track - Room E

G01 - Artificial Neural Networks and Machine Learning

Chair: Liya Ding

1. Aliased states discerning in POMDPs and improved anticipatory classifier system
Tomohiro Hayashida, Ichiro Nishizaki, Ryosuke Sakato
2. Training example generation method for supervised learning agents in sequential scenarios
Paweł Stobiecki, Bartłomiej Śnieżyński
3. Overfitting problem in a virtual sensor obtained with W-M method
Przemysław Andrzej Wałęga

Special Session - Room G

IS01: Knowledge-based Learning and Education Support System: Design and Function (part 1)

Chairs: Tomoko Kojiri, Yuki Hayashi, Toyohide Watanabe

1. Improvement of detection for warning students in e-learning using web cameras
Kenichi Takahashi, Masahiro Ueno
2. Estimation of e-Education system using Virtual Exploratory Learning
Hiroshi Matsuda, Yoshiaki Shindo
3. Reusing knowledge based on ontology and organizational model
Achraf Ben Miled

Special Session - Room H

IS02: Security Engineering for Knowledge-based & Intelligent Systems & Applications

Chair: Esmiralda Moradian

1. Extended abstract digital forensics model with preservation and protection as umbrella principles
Shahzad Saleem, Oliver Popov, Ibrahim Bagilli
2. Biometric identification on android smartphones
Shah Faisal Darwaisha, Esmiralda Moradiana, Tirdad Rahmanib, Martin Knauer
3. An infrastructure for individualised and intelligent decision-making and negotiation in cyber-physical systems
Anne Håkansson, Ronald L. Hartung

12:00-12:10 – Short break

12:10-13:20 – Parallel Sessions

General Track - Room C

G06: Web Intelligence

IS31: Intelligent Network and Service (part 1)

Chairs: Dariusz Król, Takaya Yuizono, Motoki Miura, Jun Munemori

1. Poss-OWL 2: Possibilistic Extension of OWL 2 for an uncertain geographic ontology
Safia Bal-Bourai, Aicha Mokhtari
2. Extended content-boosted matrix factorization algorithm for recommender systems
Oleksandr Krasnoshchok, Yngve Lamo
3. Learning system using simple electroencephalograph feedback effect during memory work
Kouji Yoshida, Fumiyasu Hirai, Isao Miyaji
4. Next generation of embedded system on cloud computing
Tetsuo Furuichi, Kunihiro Yamada

General Track - Room D

G02: Nature Inspired Methods and Optimization (part 2)

Chair: Urszula Boryczka

1. A surrounding world knowledge acquiring by using a low-cost ultrasound sensors
Bogusław Szlachetko, Michal Lower

2. A hybrid of bacterial foraging and differential evolution -based distance of sequences
Muhammad Marwan Muhammad Fuad
3. Island-based differential evolution algorithm for the discrete-continuous scheduling with continuous resource discretisation
Piotr Jędrzejowicz, Aleksander Skakovski
4. Arabic textual images compression approach
Jassem Mtimet, Hamid Amiri

General Track - Room E

G05: Knowledge Discovery and Data Mining (part 1)

Chair: Dariusz Barbuca

1. Pruning statistically insignificant association rules in the presence of high-confidence rules in web usage data
Maja Dimitrijevic, Zita Bosnjak
2. Soft approach to identification of cohesive clusters in two gene representations
Michał Kozielski, Aleksandra Gruca
3. Spatial internet traffic load forecasting with using estimation method
Anna Kamińska-Chuchmała
4. RELIEF-based selection of decision rules
Urszula Stańczyk

Special Session - Room G

IS28: Data Science for Big Data (part 1)

Chairs: Katsutoshi Yada, Takahira Yamaguchi

1. Consumer purchasing behavior extraction using statistical learning theory
Yi Zuo, A B M Shawkat Ali, Katsutoshi Yada
2. Bayesian estimations with isotropic and anisotropic matrices for a multinomial logit model
Nozomi Matsumoto, Takeshi Kurosawa
3. Evaluation of price elasticity and brand loyalty in milk products
Natsuki Sano, Syusuke Tamura, Katsutoshi Yada, Tomomichi Suzuki
4. Prediction model using micro-clustering
Takanobu Nakahara, Takeaki Uno, Yukinobu Hamuro

Special Session - Room H

IS16: Application of semantic Technologies to Decision Making

Chairs: Cecilia Zanni-Merk, Colette Faucher

1. Description of a semantic-based navigation model to explore document collections in the maritime domain
Valentina Dragos
2. A semantic layered architecture for analysis and diagnosis of SME
Nathalie Gartiser, Cecilia Zanni-Merk, Lucas Boullosa, Ana Casal
3. Hybrid fuzzy-ontological project framework of a team work simulation system
Cezary Orłowski, Irena Bach-Dąbrowska, Paweł Kapłański, Włodzimierz Wysocki
4. The hybrid fuzzy - SOEKS approach to the Polish Internet mortgage market
Aleksander Orłowski, Edward Szczerbicki

13:20-14:20 – Lunch

14:20-15:20 Plenary session

Processing Inconsistency in Determining Knowledge of a Collective

Prof. Ngoc Thanh Nguyen

Chair: Prof. Colette Faucher

Room C

15:20-15:30 – Short break

15:30-16:40 – Parallel Sessions

General Track - Room C

G11: Intelligent Systems Applications and Miscellaneous Topics (part 2)

Chair: Carlos Toro

1. Unscheduled public transport intelligent navigation system
José Sendra Salcedo, Osvaldo Cairó Battistuti
2. Hybrid data in the multiobjective evaluation of investments
Bogdan Rębiasz, Andrzej Macioł
3. Computational intelligence methods of a safe ship control
Józef Lisowski
4. Implementing Virtual Engineering Objects (VEO) with the Set of Experience Knowledge Structure (SOEKS)
Syed Imran Shafiq, Cesar Sanin, Edward Szczerbicki, Carlos Toro

General Track - Room D

G05: Knowledge Discovery and Data Mining (part 2)

Chair: Marcin Blachnik

1. Sequential classification by exploring levels of abstraction
Tomasz Łukaszewski, Szymon Wilk
2. A privacy preserving technique to prevent sensitive behavior exposure in semantic location-based service
Yuna Oh, Kangsoo Jung, Seog Park
3. Tightening upper bounds to the expected support for uncertain frequent pattern mining
Carson K. Leung, Richard Kyle MacKinnon, Syed K. Tanbeer
4. Effectively and efficiently mining frequent pattern from dense graph streams on disk
Peter Braun, Juan J. Cameron, Alfredo Cuzzocrea, Fan Jiang, Carson K. Leung

Special Session - Room E

IS13: Modelling with Qualitative and Quantitative Pairwise Comparisons (part 1)

Chairs: Ryszard Janicki, Konrad Kułakowski

1. Tender with success - the pairwise comparisons approach
Konrad Kułakowski, Jacek Szybowski, Ryszard Tadeusiewicz
2. The new triad based inconsistency indices for pairwise comparisons
Konrad Kułakowski, Jacek Szybowski
3. Fair ranking in competitive bidding procurement: A case analysis
Michael Soltys

Special Session - Room G

IS28: Data Science for Big Data (part 2)

IS08: Recent Advances in Knowledge Engineering and Soft Data Paradigms

Chairs: Katsutoshi Yada, Takahira Yamaguchi, Mika Sato-Ilic, Lakhmi C. Jain

1. Identifying types of staying facilities from traffic behavior log data
Yu Sugawara, Takeshi Morita, Hidenao Abe, Shuichi Matsumoto, Takahira Yamaguchi
2. An analysis of the effects of customers' migratory behavior in the inner areas of the sales floor in a retail store on their purchase
Yoshihiro Ohata, Asako Ohno, Takahiro Yamasaki, Kin-ichiroh Tokiwa
3. A fuzzy clustering method using the relative structure of the belongingness of objects to clusters
Tosei Hatori, Mika Sato-Ilic

4. On fuzzy priority weights of AHP for double inner dependence structure
Shin-ichi Ohnishi, Takahiro Yamanoi

Special Session - Room H

IS24: Immunity-Based Systems: Resilient Computing (part 1)

IS10: Culturally-Aware AI Systems

Chairs: Yoshiteru Ishida, Joerg Rainer Noennig, Colette Faucher

1. Transferring functions of biological immune systems to communication processes in disasters using cellular automata
Peter Schmiedgen, Sebastian Wiesenhütter, Jörg Rainer Noennig
2. Rigid folding in robotic multi-agent systems
Benjamin Felbrich, Jörg Rainer Nönnig, Sebastian Wiesenhütter
3. Analogy between immune system and sensor replacement using mobile robots on wireless sensor networks
Yuji Watanabe, Ei Jyo
4. Detection of hidden laughter for human-agent interaction
Shiho Tatsumi, Yasser Mohammad, Yoshimasa Ohmoto, Toyoaki Nishida

16:40-17:00 – Coffee break

17:00-18:15 – Parallel Sessions

General Track - Room C

G04: Agent and Multi-Agent Systems

Chair: Ignac Lovrek

1. Signal learning with messages by reinforcement learning
Kozue Noro, Hiroshi Tenmoto, Akimoto Kamiya
2. Ontology based multi agent system for improved procurement process: Application for the handicraft domain
Rahma Dhaouadi, Achraf Benmiled, Khaled Ghédira
3. Enhancing DisCSP-Netlogo from simulation to real-execution of agents in distributed constraints
Ionel Muscalagiu, Popa Horia Emilb, Viorel Negrub
4. Context-aware multi-agent system in machine-to-machine communication
Hrvoje Maracic, Tihana Miskovic, Mario Kusek, Ignac Lovrek

Special Session - Room D

IS01: Knowledge-based Learning and Education Support System: Design and Function (part 2)

Chairs: Tomoko Kojiri, Yuki Hayashi, Toyohide Watanabe

1. Decision support software for search & rescue operations
Michał Wysokiński, Robert Marcjan, Jacek Dajda
2. Understanding level estimation using discussion maps for supporting consensus-building
Hironobu Takagi, Kazutaka Shimada
3. Preliminary evaluation of a problem-posing method in programming classes
Hisayoshi Kunimune, Masaaki Niimura
4. Modification of past remarks for activating discussion in collaborative learning
Fumito Natea, Yuki Hayashi, Tomoko Kojiri

Special Session - Room E

IS13: Modelling with Qualitative and Quantitative Pairwise Comparisons (part 2)

Chairs: Ryszard Janicki, Konrad Kułakowski

1. Bonus distribution for employees of a telephone customer service department: a case study based on pairwise comparisons
Agnieszka Kalinowska, Tadeusz Trzaskalik

2. The consistency of group pairwise comparison matrices and some boundary properties for consistency indices
Matteo Brunelli, Michele Fedrizzi
3. Inefficient weights from pairwise comparison matrices
Sándor Bozóki
4. On reducing inconsistency of pairwise comparison matrices below an acceptance threshold
Atilla Poesz

Special Session - Room G

IS30: Artificial Intelligence Methods in Optimization, Scheduling and Planning

Chairs: Adam Słowik, Zbigniew Banaszak, Grzegorz Bocewicz, Krzysztof Bzdrya

1. A hybrid multi-agent approach to the solving supply chain problems
Paweł Sitek, Izabela Ewa Nielsen, Jarosław Wikarek
2. Cyclic scheduling of multimodal processes in crystalline-like network structures
Grzegorz Bocewicz, Robert Wójcik, Zbigniew Banaszak
3. Optimization model of agile team's cohesion
Irena Bach-Dąbrowska, Paweł Pawlewski
4. The use of intelligent systems for planning and scheduling of product development projects
Marcin Relich, Wojciech Muszyński

Special Session - Room H

IS09: Innovation in Automation and Autonomy using Soft Computing Techniques

Chair: Jeffrey Tweedale

1. Ant Colony Optimization based navigational decision support system
Agnieszka Lazarowska
2. Automation in handling uncertainty in semantic-knowledge based robotic task-planning by using markov logic networks
Ahmed Al-Moadhen, Michael Packianather, Rossi Setchi, and Renxi Qiu
3. Enhancing the degree of autonomy on a 'Tier 1' unmanned aerial vehicle using a visual landing framework
Jeffrey W. Tweedale, Dion Gonano
4. A review of cognitive decision-making within future mission systems
Jeffrey W. Tweedale

19:30-21:30 – Welcome Reception

16 September 2014 (Tuesday)

8:00-17:00 - Registration

8:30-10:00 – Parallel Sessions

General Track - Room C

G11: Intelligent Systems Applications and Miscellaneous Topics (part 3)

Chair: Carlos Toro

1. Viability of decisional DNA in robotics
Carl Sheffer, Cesar Sanin, Edward Szczerbicki
2. Ontology based semantic annotation of Urdu language web documents
Quratulain Rajput
3. Application of a conceptual framework for the modelling and execution of clinical guidelines as networks of concurrent processes
Nick Lik San Fung, Ing Widya, Tom Broens, Nekane Larburu, Richard Bults, Erez Shalom, Val Jonesa, Hermie Hermens

4. Flow graph approach for studying fuzzy inference systems
Alicja Mieszkowicz-Rolka, Leszek Rolka
5. Sports data mining: predicting results for the college football games
Carson K. Leung, Kyle W. Joseph

General Track - Room D

G03: Knowledge Based and Expert Systems (part 1)

Chair: Anne Hakansson

1. Using an improved rule match algorithm in an expert system to detect broken driving rules for an energy-efficiency and safety relevant driving system
Emre Yay, Natividad Martínez Madrid, Juan Antonio Ortega Ramírez
2. Taiwan stock investment with gene expression programming
Cheng-Han Lee, Chang-Biau Yang, Hung-Hsin Chen
3. On the belief merging by negotiation
Trong Hieu Tran, Quoc Bao Vo, Thi Hong Khanh Nguyen
4. On-line modelling and assessment of the state of technosphere and environment objects based on monitoring data
Tatiana G. Penkova, Anna V. Korobko, Valeriy V. Nicheporchuk, Lyudmila F. Nozhenkova
5. Aspect based summarization of context dependent opinion words
Hitesh Kansal, Durga Toshniwal

Special Session - Room E

IS32: Web and Social Intelligence for Supporting Creative Human Activities

Chairs: Taketoshi Ushiana, Naoto Mukai, Toyohide Watanabe

1. Computer-supported novel composition, based on externalization
Toyohide Watanabe, Ryosuke Arasawa
2. Application of detecting blinks for communication support tool
Ippei Torii, Kaoruko Ohtani and Naohiro Ishii
3. Structure of a prototype system for managing letters
Hideaki Ito, Kazuki Kasugai, Syouhei Kanamori, Shimpei Kanekasu, Shinsaku Tashiro, Tsuyoshi Taki, Junichi Hasegawa, Kyoko Raita
4. A user sensitive privacy-preserving location sharing system in mobile social networks
Wei Cheng Cheng, Masayoshi Aritsugi
5. Effective browsing technique based on behavioral collaborative filtering on social streams
Hong Yan, Taketoshi Ushiana

Special Session - Room G

IS31: Intelligent Network and Service (part 2)

Chairs: Takaya Yuizono, Motoki Miura, Jun Munemori

1. Proposal to sliding window-based support vector regression
Yuya Suzuki, Hirofumi Ibayashi, Yukimasa Kaneda, Hiroshi Mineno
2. An implementation of concurrency control between batch update and online entries
Tsukasa Kudo, Yui Takeda, Masahiko Ishino, Kenji Saotome, Nobuhiro Kataoka
3. Intelligent user interface of smartphones for on-vehicle information devices
Seiji Matsuyama, Takatomo Yamabe, Natsumi Takahashi, Ryoza Kiyohara
4. A text selection technique using word snapping
Motoki Miura, Kenji Saisho
5. Usage of blogging software for laboratory management to support weekly seminars using research activity reports
Takaya Yuizono, Jiwei Jiang, Xinbo Zhao, Jun Munemori

Special Session - Room H

IS29: Human Factors for Communication & Intelligent Systems

Chairs: Atsuko K. Yamazaki, Hiroshi Hasegawa

1. Relation between image detection time and thumbnail image size for satellite-based telemedicine
Takayuki Suga, Kenji Muto, Kazuo Yagi, Kikuo Asai, Kimio Kondo

2. Verification of Kando requirements in the Kando understanding support process using DOE and bioinstrumentation
Satoshi Takezawa, Yu Yoshizaki, Akari Utsumi, Hiroshi Haseagwa
3. Analysis of the effect of aroma foot care using functional near-infrared spectroscopy
Kaoru Eto, Atsuko K. Yamazaki, Minoru Mukuda, Yasuo Kabasawa, Hiroko Yoshida, Kiyomi Ito, Michie Ogiwara
4. A considerate application prediction system with artificial neural network
Daichi Hasumi, Eiji Kamioka
5. Similarity index for sound-alikeness of drug names with pitch accents
Tomoyuki Nagata, Masaomi Kimura, Fumito Tsuchiya

10:00-10:30 – Coffee break

10:30-11:30 Plenary session
Collective Annotation: From Crowdsourcing to Social Choice
 Dr. Ulle Endriss
 Chair: Prof. Edward Szczerbicki
 Room C

11:30-11:40 – Short break

11:40-13:00 – Parallel Sessions

General Track - Room C

G08: Knowledge Management

Chairs: Ron Hartung

1. Lattice-based spatio-temporal ensemble prediction
Saulius Samulevicius, Yoann Pitarch, Torben Bach Pedersen
2. A method of identifying ontology domain
Dan Wu, Anne Håkansson
3. Total path length and number of terminal nodes for decision trees
Shahid Hussain
4. Systematic errors handling with MTE
Włodzimierz Filipowicz
5. Temporal DL–OrBAC6ε: temporal context in access control model
Ouarda Bettaz, Narhimene Boustia, Aicha Mokhtari**

General Track - Room D

G10: E-Learning, E-Business and E-Commerce

Chairs: Toyohide Watanabe, Tomoko Kojiri

1. Building intelligent tutoring systems immersed in repositories of e-learning content
Jacek Marciniak
2. Supporting contextualized information finding with automatic excerpt categorization
Ricardo Kawase, Patrick Siehndel, Bernardo Pereira Nunes
3. The principles and approach support the mapping of the personal study pathway in electronic educational environments
Taratuhina Julia, Avdeeva Zinaida, Mirishli Denis
4. Extending Moodle functionalities with ontology-based competency management
Kalthoum Rezgui, Hédia Mhiri, Khaled Ghédira

Special Session - Room E

IS17: Knowledge-Based Intelligent System and Application

Chairs: Yuji Iwahor, Yoshinori Adachi, Nobuhiro Inuzuka

1. Development of system for prevention of solitary death with mobile devices
Shunki Takami, Ippei Torii, Naohiro Ishii
2. Improvement of the measurement accuracy and speed of pupil dilation as an indicator of comprehension
Yoshinori Adachi, Masahiro Ozaki, Yuji Iwahor
3. Shadow detection by three shadow models with features robust to illumination changes
Shuya Ishida, Shinji Fukui, Yuji Iwahor, M. K. Bhuyan, Robert J. Woodham
4. Defect classification of electronic circuit board using SVM based on random sampling
Hiroaki Hagi, Yuji Iwahor, Shinji Fukui, Yoshinori Adachi, M. K. Bhuyan
5. Transition of local structures of friendship networks
Tatsuki Ito, Atsuko Mutoh, Nobuhiro Inuzuka**

Special Session - Room G

IS06: Chance Discovery and Market of Data

Chairs: Akinori Abe, Yukio Ohsawa

1. The function of facilitator in risk/chance management: action research in the stricken area of the Great East Japan Earthquake
Yumiko Nara
2. Data jackets for externalizing use value of hidden datasets
Yukio Ohsawa, Chang Liu, Teruaki Hayashi, Hiroyuki Kido
3. Discovering design concept for immovable objects
Jun Nakamura
4. Model oriented system design on big-data
Noriyuki Kushiro, Shodai Matsudaa, Kunio Takahara
5. Critical points in conversations from the perspective of chance discovery
Masumi Kubo, Akinori Abe

General Track - Room H

G09: Intelligent Vision, Image Processing and Signal Processing

IS03: Advances in Visual Intelligent Systems

Chairs: Tuan Pham, Margarita N. Favorskaya, Lakhmi Jain

1. Robust anisotropic diffusion scheme for image noise removal
Tudor Barbu
2. Semantic modelling of interactive 3D content with domain-specific ontologies
Jakub Flotyński
3. Image projection in immersive 3D visualization laboratory
Adam Mazikowski, Jacek Lebiedź
4. Distributed system for crossroads traffic surveillance with prediction of incidents
Margarita Favorskaya, Evgenii Kazmiruk, Aleksei Popov
5. Image inpainting based on self-organizing maps by using multi-agent implementation
Margarita Favorskaya, Lakhmi C. Jain, Andrey Bolgov

13:00-14:00 – Lunch

14:00-15:00 Plenary session

Process Analysis Meets Big Data

Prof. Ernesto Damiani

Chair: Prof Margarita Favorskaya

Room C

15:00-15:20 – Coffee break

15:20-17:10 – Parallel Sessions

General Track - Room C

G11: Intelligent Systems Applications and Miscellaneous Topics (part 4)

Chair: Carlos Toro

1. Rough-Fuzzy classifier modeling using data repository sets
Jiri Krupka, Pavel Jirava
2. An evaluation of mouse and keyboard interaction indicators towards non-intrusive and low cost affective modeling in an educational context
Sergio Salmeron-Majadas, Olga C. Santos, Jesus G. Boticario
3. Building knowledge from social networks on what is important to drivers in constrained road infrastructure
Panraphee Raphiphan, Arkady Zaslavsky, Maria Indrawan-Santiago
4. Generating groups of products using graph mining techniques
Sebastian A. Rios, Ivan F. Videla-Cavieres
5. A benchmark on automatic obstructive sleep apnea screening algorithms in children
Lili Erazo, Sebastian A. Riosa
6. Online detection of shutdown periods in chemical plants: A case study
Manuel Martin Salvador, Bogdan Gabrys, Indre Zliobaite

General Track - Room D

G03: Knowledge Based and Expert Systems (part 2)

Chair: Anne Hakansson

1. A case-based reasoning system to support the global software development
Rodrigo G. C. Rocha, Ryan R. Azevedo, Ygor Cesar Sousa, Eduardo de A. Tavares, Silvio Meira
2. A fault fuzzy-ontology for large scale fault-tolerant wireless sensor networks
Yazid Benazzouz, Oum-El-keir Aktouf, Ioannis Parissis
3. An ontology-based personalized retrieval model using case base reasoning
Amir Zidi, Amna Bouhana, Mourad Abed, Afef Fekih
4. A tree-based algorithm for mining diverse social entities
Peter Braun, Alfredo Cuzzocrea, Carson K. Leung, Richard Kyle MacKinnon, Syed K. Tanbeer
5. Experience based reasoning system coupled with real world knowledge
Ronald L. Hartung, Anne Hakansson
6. Representing knowledge in DL ALC from text
Ryan Ribeiro de Azevedo, Fred Freitas, Rodrigo Rocha, José Antônio Alves de Menezes, Cleyton Mário de Oliveira Rodrigues, Mikaela Campos Gomes

General Track - Room E

G05: Knowledge Discovery and Data Mining (part 3)

Chair: Ireneusz Czarnowski

1. The branch-and-bound method, genetic algorithm, and dynamic programming to determine a safe ship trajectory in fuzzy environment
Mohamed-Seghir Mostefa
2. Parallel learning and classification for rules based on formal concepts
Nida Meddouri, Hela Khoufi, Mondher Maddouri
3. Minimization of decision tree average depth for decision tables with many-valued decisions
Mohammad Azad, Mikhail Moshkov
4. Comparison of heuristics for inhibitory rule optimization
Fawaz Alsolami, Igor Chikalov, Mikhail Moshkov
5. Ensembles of instance selection methods based on feature subset
Marcin Blachnik

6. Ensemble classifier for mining data streams
Ireneusz Czarnowski, Piotr Jędrzejowicz

Special Session - Room G

IS12: Intelligent Data Analysis in Applications

Chairs: Urszula Stańczyk, Michał Kozielski

1. A personalized recommender system from probabilistic relational model and users' preferences
Rajani Chulyadyo, Philippe Leray
2. Towards accurate eye tracker calibration – methods and procedures
Katarzyna Harezlak, Pawel Kasproski, Mateusz Stasch
3. Exploratory clustering and visualization
Agnieszka Nowak-Brzezińska, Tomasz Xięski
4. Graphical models of psychosocial factors in chronic somatic diseases
Anita Galuszka, Adam Galuszka
5. Determining life cycles of evolving groups
Anna Zygmunt, Jarosław Koźlak, Edward Nawarecki, Adam Mika
6. Influence of data discretization on efficiency of Bayesian classifier for authorship attribution
Grzegorz Baron

Special Session - Room H

IS24: Immunity-Based Systems: Resilient Computing (part 2)

Chairs: Yoshiteru Ishida, Joerg Rainer Noennig

1. Towards knowledge ecosystems: modelling knowledge dynamics in environmental systems
Jörg Rainer Noennig, Anna-Maria Scheler, Katarzyna Piskorek, Jan Barski
2. A note on mapping a matching problem to a majority network as a Lyapunov function: Problem solving by synchronization
Yoshiteru Ishida, Yu-Ichiro Yamanaka
3. Asymmetry in diagrams of stable marriage problems: Stable manifolds mapped from stable matchings
Yoshiteru Ishida, Takumi Sato
4. Clustering inventory locations to improve the performance of disaster relief operations
Nur Budi Mulyono, Yoshiteru Ishida
5. Stable marriage problem mapped to Lotka-Volterra model: Stable equilibria mapped from stable matchings
Yoshikazu Hata, Yoshiteru Ishida
6. A mathematical study of combined use of anti-HIV drugs and a mutagen
Kouji Harada

19:00-22:00 – Conference dinner

17 September 2014 (Wednesday)

8:00-14:00 - Registration

8:30-10:00 – Parallel Sessions

General Track - Room C

G07: Natural Language Processing (part 1)

Chair: Michał Ptaszyński

1. An economic approach to big data in a minority language
Sandor Dembitz, Gordan Gledec, Mladen Sokele

2. Topic segmentation for textual document written in Arabic language
Anja Habacha Chaibi, Marwa Naili, Samia Sammoud
3. A Text To Speech system for Fon language using Multisyn algorithm
Théophile K. Dagba, Charbel Boco
4. Incident related tweet extraction with density ratio estimation
Hidekazu Yanagimoto, Suguru Isaji

Special Session - Room D

IS27: Complex systems

Chair: Roman Šperka

1. MAREA - from an agent simulation application to the social network analysis
Dominik Vymětal, Roman Šperka
2. Self-learning bayesian networks in diagnosis
Petr Suchánek, Franciszek Marecki, Robert Bucki
3. Trading agents' negotiation in business management using demand functions: simulation experiments with binomial distribution
Roman Šperka, Marek Spišák
4. Improving strategy in robot soccer game by sequence extraction
Vaclav Svaton, Jan Martinovic, Katerina Slaninova, Tomas Bures
5. Microsoft Excel as a tool for solving multicriteria decision problems
Radomír Perzina, Jaroslav Ramík

Special Session - Room E

IS19: Skill Acquisition and Ubiquitous Human Computer Interaction (part 1)

Chairs: Hirokazu Taki, Masato Soga

1. The effects of light blue and white backgrounds on the brain activity of Web-based English tests' takers
Atsuko K. Yamazakia, Shinji Koizumia, Hitomi Shimadaa, Kaoru Eto
2. Classification of haptic tasks based on electroencephalogram frequency analysis
Hirokazu Miura, Junki Kimura, Noriyuki Matsuda, Masato Soga, Hirokazu Taki
3. An relationship between stress-less and comfortable acoustic information, and asymmetry changes in hemoglobin concentrations
Taizo Miyachi, Daisaku Kurita, Saiko Iga, Takashi Furuhashi
4. Fluid data compression and ROI detection using run length method
Shota Ishikawa, Haiyuan Wu, Chongke Bi, Qian Chen, Hirokazu Taki, Kenji Ono
5. Analysis and identification of the EEG signals from visual stimulation
Mineyuki Tsuda, Yankun Lang, Haiyuan Wu

Special Session - Room G

IS05: Knowledge-Based Systems for e-Business (part 1)

Chairs: Kazuhiko Tsuda, Nobuo Suzuki, Masakazu Takahashi

1. Improvement of terminology extraction method for specific patent search
Kyoko Yanagihori, Koji Tanaka, Kazuhiko Tsuda
2. A study on accuracy improvement of knowledge extraction from the medical package inserts
Takashi Ikoma, Masakazu Takahashi, Kazuhiko Tsuda
3. Evaluation of communication and travel behavior extraction with latent topics
Nobuo Suzuki, Kazuhiko Tsuda
4. Study on web analytics utilizing segmentation knowledge in business to business manufacturer site
Akiyuki Sekiguchi, Kazuhiko Tsuda

Special Session - Room H

IS18: E-learning as Cooperation Among Higher Education Institutions

Chairs: Hideyuki Kanematsu, Kazunori Nishino, Yoshimi Fukumura

1. Introducing eye blink of a student to the virtual world and evaluating the affection of the eye blinking during the e-Learning
Asanka D. Dharmawansa, Yoshimi Fukumura, Hideyuki Kanematsu, Toshiro Kobayashi, Nobuyuki Ogawa, Dana M. Barry
2. An e-portfolio system that enables cooperation between institutes
Yoshimitsu Miyasawa, Yoshimi Fukumura, Takashi Yukawa
3. Development of learning methods and system to practice problems using digital materials
Kazuya Suzuki, Hideki Kondo, Shin'nosuke Yamaguchi, Yoshimasa Ohnishi, Shin'ichi Tsumori, Hiroataka Wakana, Kazunori Nishino
4. Virtual STEM class for nuclear safety education in metaverse
Hideyuki Kanematsu, Toshiro Kobayashi, Dana M. Barry, Yoshimi Fukumura, Asanka Dharmawansa, Nobuyuki Ogawa

10:00-10:30 – Coffee break

10:30-11:30 Plenary session

Robust Adaptive Predictive Modeling and Data Deluge

Prof. Bogdan Gabrys

Chair: Prof. Ignac Lovrek

Room C

11:30-11:40 – Short break

11:40-13:00 – Parallel Sessions

General Track - Room C

G07: Natural Language Processing (part 2)

Chair: Šandor Dembitz

1. Extraction Japanese slang from weblog data based on script type and stroke count
Kazuyuki Matsumoto, Kyosuke Akita, Xielifuguli Keranmu, Minoru Yoshida, Kenji Kita
2. Econo-ESA reduction scheme and the impact of its index matrix density
Faisal Rahutomo, Yuki Manabe, Teruaki Kitasuka, Masayoshi Aritsugi
3. Detecting emotive sentences with pattern-based language modelling
Michał Ptasiński, Fumito Masui, Rafał Rzepka, Kenji Araki

Special Session - Room D

IS33: Knowledge Sharing Network

IS07: Intelligent Human-Computer Interaction

Chairs: Shuichiro Yamamoto, Kazuhisa Seta

1. A study on maturity model of open source software community to estimate the quality of products
Yoshitaka Kuwata, Kentaro Takeda, Hiroshi Miura
2. A knowledge integration approach of safety-critical software development and operation based on the method architecture
Shuichiro Yamamoto
3. Historical Oslo on a handheld device – a mobile augmented reality application
Weiqin Chen
4. Estimating collaborative attitudes based on non-verbal features in collaborative learning interaction
Yuki Hayashi, Haruka Morita, Yukiko I. Nakano

Special Session - Room E

IS19: Skill Acquisition and Ubiquitous Human Computer Interaction (part 2)

Chairs: Hirokazu Taki, Masato Soga

1. Classification by EEG frequency distribution in imagination of directions
Yuki Setoa, Shumpei Ako, Kejiro Sakagami, Hirokazu Miura, Noriyuki Matsuda, Masato Soga, Hirokazu Taki
2. Development of finger motion skill learning support system based on data gloves
Kazuma Iwasako, Masato Soga, Hirokazu Taki
3. Development of Motion Navigator II enabling integrated motion display of whole body with fingers
Yuta Sato, Kazuki Hirota, Masato Soga, Hirokazu Taki
4. Development of a gesture learning environment for novices' erhu bow strokes
Fumitaka Kikukawa, Masato Soga, Hirokazu Taki

Special Session - Room G

IS05: Knowledge-Based Systems for e-Business (part 2)

Chairs: Kazuhiko Tsuda, Nobuo Suzuki, Masakazu Takahashi

1. Effects of collaborative learning on a complex doubly structured network
Setsuya Kurahashi, Keisuke Kuniyoshi
2. Classifying homographs in Japanese social media texts using a user interest model
Tomohiko Harada, Kazuhiko Tsuda
3. An extraction method of ITSS common skill knowledge using Japanese text network analysis
Koji Tanaka, Kazuhiko Tsuda
4. A study on effect evaluation of payment method change in the mail-order industry
Masakazu Takahashi, Hiroki Azuma, Kazuhiko Tsuda

ISRP-14: Intelligent Systems Research Progress Workshop - Room H

Chair: Robert J.Howlett

13:00-13:30 - Closing ceremony

13:30-14:30 – Lunch

14:30-20:00 – Excursion (optional)

Social Events

Group Photo Session

All participants of the KES 2014 conference will be invited for a group photo session.

Date: Monday, 15 September 2014
Time: 10:15 – 10:30 (10:15 am – 10:30 am)
Place: the lawn in front of PPNT

Welcome Reception

At the close of the first day of the conference all participants are invited for light snacks onboard of an old Gdynia Maritime University training sailing ship turned into museum.

Date: Monday, 15 September 2014
Time: 19:30 – 21:30 (07:30 pm – 09:30 pm)
Place: Sailing ship Dar Pomorza, Molo Południowe

Address

Statek-muzeum "Dar Pomorza"
Al. Jana Pawła II
81-345 Gdynia



Conference Dinner

On Tuesday at the Hotel Nadmorski will be held a gala dinner. The Hotel Nadmorski is located by the white beach of Gdansk Bay and the Seaside Boulevard - walking and cycling route along the coast. Over a meal and drinks, there will be the excellent opportunity to renew old acquaintances and build new ones.

Date: Tuesday, 16 September 2014
Time: 19:00 – 22:00 (07:00 pm – 10:00 pm)
Place: Restaurant at Hotel Nadmorski



Address

Hotel Nadmorski
81-409 Gdynia
ul. Ejzmonda 2

Excursion to Gdansk (optional)

After the conference a tour to the Old Town in Gdansk will be organized (with an English tour guide) for the conference participants and accompanying persons.

In Gdansk - Hanseatic thousand-year-old town - we will show you the most famous Gdansk monuments located near the heart of its Old Town district, around the Long Street and the quayside. You will walk the Long Street and the Market Square and admire the Main Town Hall, the famous Neptune Fountain, the Golden House, the Court of Artus and the beautiful XVI – XVII century houses. At the end of the Market Square you will find the



Green Gate. Next, you will see the picturesque old quayside by the Motlawa River. Then you will have a chance to see another great monument – the Crane. Later, we will take you to the charming Mariacka Street with the largest red-brick gothic church in Europe – St. Mary’s Church. The Mariacka Street hosts also the famous Gdansk amber manufacturers with their gorgeous handicraft. At the end of the tour you will visit the Solidarity Square with the historical Gate of Gdansk Shipyard, where the Solidarity was born.

On our way back to Gdynia, we will stop in Sopot to see the longest wooden pier in Europe.

Date: Wednesday, 17 September 2014

Time: 14:30 – 20:00 (02:30 pm – 08:00 pm)

Meeting place: at the entrance to PPNT

Participants number: min. 25 - max. 35 persons

We hope that you will enjoy this trip!

Please contact the Conference help desk on September 14 or 15, if you are interested in participation.

Additional Information

Conference help desk

Opening hours:

14 September 2014 (Sunday)	17:00 – 19:00 (05:00 pm – 07:00 pm)
15 September 2014 (Monday)	07:30 – 17:00 (07:30 am – 05:00 pm)
16 September 2014 (Tuesday)	08:00 – 17:00 (08:00 pm – 05:00 pm)
17 September 2014 (Wednesday)	08:00 – 14:00 (08:00 pm – 02:00 pm)

Moving around the city of Gdynia and the Tri-city area

Bus/trolley-bus

Gdynia has a very well developed bus network. Each part of the city can be easily reached by bus or trolley-bus. One ticket costs 3,00 PLN (about 0.70 EUR) and can be bought directly from the bus driver and then should be punched. You may have to buy a set of four tickets and you can pay only in PLN.

Commuter Train (SKM)

A commuter train, known as SKM (Fast City Train), runs constantly between Gdynia, Sopot and Gdansk from 5 am till midnight, stopping at a dozen intermediate stations. The trains run every 5 to 10 minutes (not so frequently in the evening) and the trip to Gdansk takes about 35-40 minutes. You buy tickets at ticket offices in the stations or some newsstands and validate them in the yellow machines at the platform entrance. The fare depends on the distance. When buying a ticket, say the name of station you want to go to.

TAXI

City Taxi Plus, phone: + 48 58 668 00 00

Auto-Taxi-Nord, phone: + 48 58 629 11 11

Euroschool Taxi, phone: + 48 58 629 80 00

Halo Express Taxi, phone: + 48 58 623 18 18

Non-Stop Taxi-Radio, phone: + 48 58 625 01 01

Merc Taxi, phone: + 48 58 624 17 17

Make sure that the taxi driver can confirm the price before you start the journey.

Useful telephone numbers

The country area code for Poland: +48

Emergency services:

997 – Police

998 – Fire department

999 – Ambulance

112 – the access number for all emergency services: police, ambulance and fire department (a mobile phone connection)

About The Tri-City

The cities of Gdynia, Sopot and Gdansk are called "Tri-City Complex" and are seldom visited apart from each other. Although each bears its own distinct identity they have become identified together. Those enjoying long walks may try to reach Gdansk (starting from Gdynia through Sopot) along the beach.

GDYNIA

Having received its city rights in 1926, Gdynia is one of the youngest Polish cities and has about 251,000 inhabitants. With its very big and famous harbour, Gdynia is the sea capital of Poland. No other Polish town and only few European cities have such a long seafront and easy access to the sea. It is 12.5 km long, excluding the port area. Gdynia offers a great variety of tourist attractions. Its Music Theatre attracts culture friends from all over Poland. The Municipal Theatre is perhaps a little more "sepia", although also involved in music since it houses jazz events. Every summer at Gdynia, theatre lovers may watch the shows without leaving the beach since there are theatre performances on the so-called "Summer Stage". Fascinating items from the time when Gdynia was a little village are displayed in the "Museum of Gdynia". Visiting this museum, it is hard to believe that this forgotten village became "the Polish New York" (National Geographic) after only 13 years of development. Luxury shops, located next to large markets such as the famous Market Place (Hala Targowa), offer an excellent selection of goods. Open-air-events, such as New Years Eve, street basketball, may picnic, sea days, regatta and motor-cross tournaments attract thousands of inhabitants and visitors from other places. Politicians, social and business activists often choose Gdynia as place of their meetings.

SOPOT

Neighbouring Sopot is a seaside health resort with unusual microclimate. Beautiful wide beaches, a breezy boardwalk, elegant hotels with full amenities and a rich cultural program attract visitors from Poland and Europe.

GDANSK

Gdansk had a tumultuous history, with citizens from Germany, Poland and other countries contributing to its cosmopolitan air. After being overrun by the Teutonic Knights, Gdansk joined the Hanseatic League in the 14th century. In the 17th century, it was one of the few Polish cities to withstand the Swedish invasion. After World War I, it was declared the Free City of Gdansk/Danzig. On September 1, 1939, the first shots of World War II were fired at Westerplatte, a Polish garrison outside the city. The city was nearly levelled during the war and meticulously rebuilt for the next twenty years. In 1970, a massive demonstration against the Communist regime originated in the Gdansk Shipyard. Ten years later, another shipyard protest led to the creation of the Solidarity Labour Union. In 1990, former shipyard worker and Solidarity leader Lech Walesa was elected President of newly Democratic Poland.

In the Old Town, visitors can once again be impressed by the authentically restored city hall, the Neptune Fountain, the Arthur's Court, the Golden Gate, Green Gate and the gothic church of the Holy Virgin Mary. Along the waterfront the Old Crane, today a maritime museum, dominates the skyline. Westerplatte obelisk just outside the city, where the World War II began, and the Monument of Murdered Shipyard Workers, dedicated to the workers who died during anti-Communist demonstrations, are mementoes of the city's modern history. Also near Gdansk is the suburb of Oliwa, the site of an immense cathedral whose impeccable acoustics capture the magnificent sounds of the great organ during public recitals.

The city's most famous citizens include astronomer Johannes Hevelius, physicist Gabriel Fahrenheit, philosopher Arthur Schopenhauer, writer Gunter Grass and, most recently, Lech Walesa.