# The Second International Conference
# on Information Technology and Quantitative Management
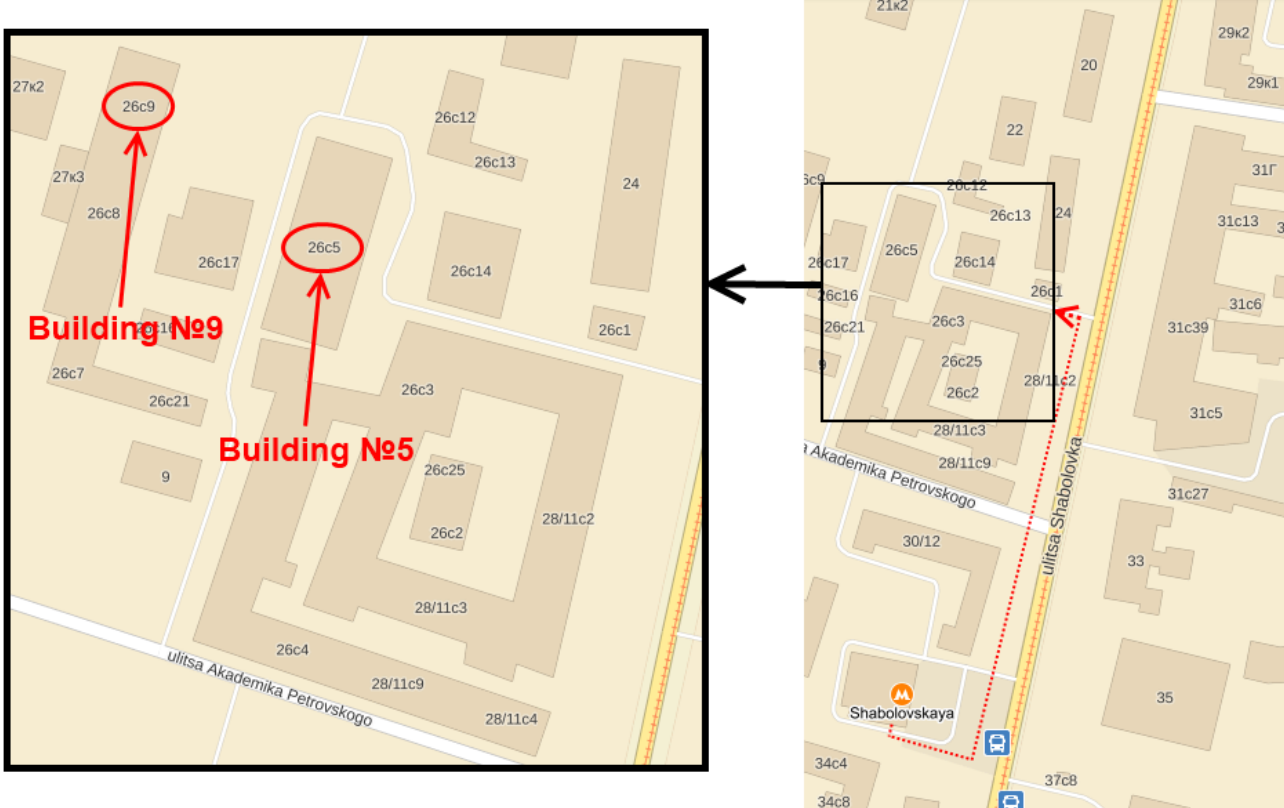# (ITQM 2014)

June 3-5, 2014

Moscow, Russia



# Conference Program

# Conference Venue

The ITQM 2014 Conference takes place at the HSE building at Shabolovka (Moscow, 26 Shabolovka Str.).

*26 Shabolovka Str.*

The HSE building is located within 5 minutes walking distance from "Shabolovskaya" (Шаболовская) metro station (see the map below).



The ITQM 2014 Conference takes place at the following two buildings:

- Building №9 – Opening Ceremony, Keynote speakers, Tutorial Lectures.
- Building №5 (3$^{rd}$ floor) – Parallel sessions, coffee breaks

| Parallel Sessions | Building № | Room № |
|---|---|---|
| Registration, Welcome Address, Keynote speakers, Tutorial Lectures | 9 | K-9 |
| S01, S06, S08 | 5 | 5309 |
| S04, S05, W02, W05, | | 5310 |
| S02, S07, S09, W03, W06 | | 5312 |
| S03, W01, W04, W07, W09 | | 5313 |
| W08 | | 5314 |
| Coffee breaks | | 5306, 5307 |

The registration desk is located at Hall K-9 on Shabolovka.

# Organizing Committees

**Program/Conference Chairs:** Fuad Aleskerov (HSE), Yong Shi (IAITQM)
**Conference Vice Chair:** Alexander Lepskiy (HSE)
**Conference Organizers:**

- International Academy of Information Technology and Quantitative Management (IAITQM)
- National Research University Higher School of Economics (HSE)

# Program Committee

- Prof. **Fuad T. Aleskerov** (HSE, Moscow, Russia);
- Leading Research Fellow **Mikhail V. Batsyn** (HSE, Nijniy Novgorod, Russia);
- Prof. **Alexander S. Belenky** (HSE, Moscow, Russia);
- Prof. **Francisco Javier Cabrerizo** (UNED, Spain);
- Prof. **Rongda Chen** (Zhejiang University of Finance & Economics, China);
- Prof. **Francisco Chiclana** (De Montfort University, U.K.);
- Prof. **Vyacheslav V. Chistyakov** (NRU HSE, Nijniy Novgorod, Russia);
- Prof. **Ioan Dzitac** (Agora University of Oradea, Romania);
- Prof. **Feliks I. Ereshko** (Dorodnicyn Computing Centre, Russian Academy of Science, Moscow, Russia);
- Prof. **Florin Gheorghe Filip** (Romanian Academy, Romania);
- Prof. **Jifa Gu** (Management School of Graduate University of Chinese Academy of Sciences, China);
- Prof. **Hamido Fujita** (Iwate Prefectural University, Japan);
- Prof. **Luiz Flavio Autran Monteiro Gomes** (Ibmec/Rio de Janeiro, Brazil);
- Prof. **Enrique Herrera-Viedma** (Granada University, Spain);
- Prof. **Alexander M. Karminsky** (International Laboratory of Quantitative Finance, HSE, Moscow, Russia);
- Prof. **Sergei O. Kuznetsov** (HSE, Moscow, Russia);
- Prof. **Alexander E. Lepskiy** (HSE, Moscow, Russia);
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- Prof. **Xingsen Li** (NIT, Zhejiang University, China);
- Prof. **Xiaodong Lin** (Rutgers University, USA);
- Prof. **Yanbin Liu** (NIT, Zhejiang University, China);
- Prof. **Alexander V. Lotov** (Dorodnicyn Computing Centre, Russian Academy of Science, Moscow, Russia);
- Prof. **Svetlana V. Maltseva** (HSE, Moscow, Russia);
- Prof. **Boris G. Mirkin** (HSE, Moscow, Russia);
- Prof. **Dmitry A. Novikov** (Institute of Control Sciences, Russian Academy of Science, Moscow, Russia);
- Prof. **Panos M. Pardalos** (University of Florida, USA);
- Prof. **Yi Peng** (University of Electronic Science and Technology of China, China);
- Prof. **Henry I. Penikas** (HSE, Moscow, Russia);
- Prof. **Ignacio Javier Pérez** (University of Cadiz, Spain);
- Prof. **Zhiquan Qi** (Chinese Academy of Sciences Research Center on Fictitious Economy and Data Science, Beijing, China);
- Prof. **Alexander A. Shananin** (Moscow Physic-Technical University, Moscow, Russia);
- Prof. **Bin Shen** (NIT, Zhejiang University, China);
- Prof. **Yong Shi** (College of Information Science and Technology, University of Nebraska at Omaha, USA, and Chinese Academy of Sciences Research Center on Fictitious Economy and Data Science, Beijing, China);
- Prof. **Dominik Slezak** (Warsaw University, Poland);
- Prof. **Minghe Sun** (University of Texas at San Antonio, USA);
- Prof. **Yingjie Tian** (Chinese Academy of Sciences Research Center on Fictitious Economy and Data Science, Beijing, China);
- Prof. **Alexander A. Vasin** (Lomonosov Moscow State University, Moscow, Russia);
- Prof. **Shouyang Wang** (Management Science, The Academy of Mathematics and System Science, Chinese Academy of Sciences, China);
- Prof. **Xiaoguang Yang** (Management Science, The Academy of Mathematics and System Science, Chinese Academy of Sciences, China);
- Prof. **Haolan Zhang** (NIT, Zhejiang University, China);
- Prof. **Lingling Zhang** (Management School of Graduate University of Chinese Academy of Sciences, China);
- Prof. **Peng Zhang** (Chinese Academy of Sciences, China);

# Special Sessions and Workshops

**Special Sessions:**

- **Special Session 01: IT Enabled Economic Computing and Simulating**
- **Special Session 02: QM in Energy Economics and Electric Networks**
- **Special Session 03: QM in Finance and Banking**
- **Special Session 04: Fuzzy Preference Modelling, Decision Making and Consensus**
- **Special Session 05: QM and Mechanism Design**
- **Special Session 06: Logistics and optimization**
- **Special Session 07: Soft Computing Methods in Quantitative Management and Decision Making**
- **Special Session 08: Formal Concept Analysis and Rough Set Theory for Information Technologies and Quantitative Management**
- **Special Session 09: Analytics in Education**

**Workshops:**

- **Workshop 01: Multicriteria Analysis with Imprecise Information and Criteria Interaction**
- **Workshop 02: Intelligent Decision Making and Extenics based Innovation**
- **Workshop 03: Intelligent Knowledge Management**
- **Workshop 04: Risk Correlation Analysis and Risk Measurement**
- **Workshop 05: Optimization-based Data Mining**
- **Workshop 06: The First Workshop on Data Mining and Social Network Analysis**
- **Workshop 07: High Performance Data Analysis**
- **Workshop 08: Semantic Learning and Intelligent Awareness**
- **Workshop 09: E-health and Social Computing**

# Program in brief

## Tuesday, 3 June

| | |
|---|---|
| 08:30-19:00 | Registration |
| 09:30-10:00 | Welcome Address |
| 10:00-10:40 | Keynote I "Big Data: Analysis and Procedures" |
| | Part 1: **Fuad Aleskerov** "Choice Procedures in Big Data Analysis" |
| | Chairman: **Yong Shi** |
| 10:40-11:20 | Part 2. **Sergiy Butenko "Network-Based Analysis of Big Data"** |
| | Chairman: **Svetlana Maltseva** |
| 11:20-11:40 | Coffee Break |
| 11:40-12:30 | Tutorial I: **Ning Zhong** "Research Issues and Challenges on Brain Informatics" |
| | Chairman: **Alexander Lepskiy** |
| 12:30-14:00 | Lunch Break |
| 14:00-16:00 | Session I (SS01, SS02, SS03, W02) |
| 16:00-16:20 | Coffee Break |
| 16:20-18:20 | Session II (SS01, SS09, W01, W02) |
| 19:00-21:00 | Welcome Party, IAITQM Awards Ceremony |

## Wednesday, 4 June

| | |
|---|---|
| 09:00-19:00 | Registration |
| 9:45-10:35 | Keynote II: **Shouyang Wang "TEI@I Methodology and Applications to Economic Analysis and Forecasting"** |
| | **Chairman: Vyacheslav Chistyakov** |
| 10:40-11:30 | Tutorial II: **Boris Mirkin** "Data Clustering: Some Topics of Current Interest" |
| | Chairman: **Vyacheslav Chistyakov** |
| 11:30-11:50 | Coffee Break |
| 11:50-13:30 | Session III (SS05, SS06, SS07, W07) |
| 13:30-15:00 | Lunch Break, IAITQM Board Meeting |
| 15:00-16:40 | Session IV (SS04, SS06, SS07, W04, W08) |
| 16:40-17:00 | Coffee Break |
| 17:00-18:40 | Session V (SS04, SS06, W03, W04, W08) |

## Thursday, 5 June

| | |
|---|---|
| 09:00-14:00 | Registration |
| 9:45-10:35 | Keynote III: **Panos M. Pardalos** "A New Embedded Feature Selection Method for High Dimensional Datasets" |
| | Chairman: **Fuad Aleskerov** |
| 10:40-11:30 | Tutorial III: **Luiz F. Autran M. Gomes** "Robustness in Discrete Multi-Criteria Decision Analysis" |
| | Chairman: **Boris Mirkin** |
| 11:30-11:45 | Coffee Break |
| 11:45-13:25 | Session VI (SS08, W05, W06, W09) |
| 13:25-13:40 | Coffee Break |
| 14:00-15:00 | Session VII (SS08, W05, W06, W09) |
| 15:00-16:00 | Lunch Break |
| 20:00-23:00 | Banquet |

# Keynote speakers

## Keynote Talk 1. Big Data: Analysis and Procedures

**Part 1. Fuad Aleskerov "Choice Procedures in Big Data Analysis"**

Tuesday, 3 June
10:00-10:40
K-9

**Fuad Aleskerov**, Head of Mathematics Department of National Research University "Higher School of Economics" (HSE), Head of International Laboratory of Decision Choice and Analysis of HSE.

**Areas of expertise:** Decision theory, Social and individual choice theory, multicriteria choice theory, Theory of Binary Relations, Theory of Political Processes, Discrete Mathematical Models, Banking.

*Abstract*

A set of choice procedures is presented for an analysis of big data, specially, in the search problem. These procedures include different versions of a superposition of super-threshold choice rules, and several other rules, including Pareto-rule and uni-criterial rule. It is shown that the proposed procedures perform better than known procedures, e.g., Support Vector Machines. A comparison of different procedures on Microsoft Data is presented.

**Part 2. Sergiy Butenko "Network-Based Analysis of Big Data"**

Tuesday, 3 June
10:40-11:20
K-9

**Sergiy Butenko,** Associate Professor and Donna and Jim Furber `64 Faculty Fellow in Industrial and Systems Engineering, Ph.D., Texas A&M University.

Dr. Butenko's research concentrates mainly on global and discrete optimization and their applications. In particular, he is interested in theoretical and computational aspects of continuous global optimization approaches for solving discrete optimization problems on graphs. Applications of interest include network-based data mining, analysis of biological and social networks, wireless ad hoc and sensor networks, and energy.

*Abstract*

Big data arising in various complex systems can be conveniently modeled using networks, in which the components of a complex system are described by nodes and pairwise interactions between different components are represented by edges. Network-based analysis allows to capture some global structural properties of the system and predict overall trends in its dynamics. This talk will focus a methodological framework for analyzing clusters in networks representing big data.

# Keynote Talk 2.

**Shouyang Wang "TEI@I Methodology and Applications to Economic Analysis and Forecasting"**

**Shouyang Wang**

Center for Forecasting Science, Chinese Academy of Sciences;
Academy of Mathematics and Systems Science, Chinese Academy of Sciences

Management School, The University of Chinese Academy of Sciences

*Abstract*

A methodology is introduced for study complex systems, especially economic and social systems. The methodology is named TEI@I Methodology which implies that four components are fundamental in studying complex systems. The methodology is illustrated via economic analysis and forecasting.

# Keynote Talk 3.

**Panos M. Pardalos "A new embedded feature selection method for high dimensional datasets"**

**Panos M. Pardalos**, Distinguished Professor Center For Applied Optimization, Industrial and Systems Engineering, University of Florida.

National Research University Higher School of Economics,
Laboratory of Algorithms and Technologies for Network Analysis, Russia.

**Reseach interests:** Global Optimization and Applications, Design and Analysis of Computer Algorithms, Computational Neuroscience, Parallel Computing in Mathematical Programming, Optimization in Biomedical Engineering, Telecommunications, Supply Chain, E-commerce, and Financial Engineering, Information Theory and Control, Massive Datasets and Data Mining, Cooperative Systems, Scientist Computing, Software Design and Development.

*Abstract*

An efficient algorithm based on alternate optimization techniques is proposed. Numerical experiments on several publicly available datasets show that our proposed method can obtain competitive or better performance compared with other embedded feature selection methods. Moreover, sPSVMs remove more than 98% features in many high dimensional datasets without compromising on generalization performance and also show consistency in the feature selection process. Additionally, sPSVMs can be viewed as inducing class-specific local sparsity instead of global sparsity like other embedded methods and thus offer the advantage of interpreting the selected features in the context of the classes.

High Dimensional datasets are currently prevalent in many practical applications. Classification and feature selection are common tasks performed on such datasets. In this talk, a new embedded feature selection method for high dimensional datasets is introduced by incorporating sparsity in Proximal Support Vector Machines (PSVMs). Our method called Sparse Proximal Support Vector Machines (sPSVMs) learns a sparse representation of PSVMs by first casting it as an equivalent least squares problem and then introducing the l1-norm for sparsity.

# Tutorial lectures

## Lecture 1.

## Ning Zhong "Research Issues and Challenges on Brain Informatics"



**Ning Zhong,**

The International WIC Institute/Beijing University of Technology, China, and Maebashi Institute of Technology, Japan

*Abstract*

Brain Informatics (BI) is a new interdisciplinary and multidisciplinary field that focuses on studying the mechanisms underlying the human information processing system. It brings together researchers and practitioners from diverse fields to explore the main research problems that lie in the interplay between the studies of human brain and the research of informatics, by using powerful equipment, including functional magnetic resonance imaging (fMRI), electroencephalogram (EEG), positron emission tomography (PET), and eye-tracking as well as various wearable, ubiquitous, active, micro and nano devices. The systematic BI methodology has resulted in the brain big data, including various raw brain data, data-related information, extracted data features, found domain knowledge related to human intelligence, and so forth. In this talk, I demonstrate a systematic approach to an integrated understanding of macroscopic and microscopic level working principles of the brain by means of experimental, computational, and cognitive neuroscience studies, as well as utilizing advanced Web intelligence centric information technologies. I discuss research issues and challenges from three aspects of Brain Informatics studies that deserve closer attention: systematic investigations for complex brain science problems, new information technologies for supporting systematic brain science studies, and Brain Informatics studies based on Web intelligence research needs. These three aspects offer different ways to study traditional cognitive science, neuroscience, mental health and artificial intelligence.

## Lecture 2.

## Boris Mirkin "Data Clustering: Some Topics of Current Interest"
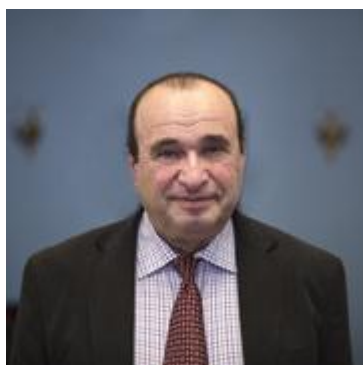


**Boris Mirkin**

Professor of Department of Data Analysis and Artificial Intelligence of HSE, Leading Research Fellow of International Laboratory of Decision Choice and Analysis of HSE.

**Areas of expertise:** mathematical methods of cluster analysis and decision making, based on experimental and textual information and applied to sociology, bioinformatics, organizational systems, development of interpreting systems.

*Abstract*

As is well known, data cluster is a subset of data entities that are similar to each other and dissimilar from the rest. After a short introduction pointing to different roles clustering plays in machine learning, data mining, and in knowledge discovery, I will move on to describe advances into three issues of current interest: the "right" number of clusters, community detection in networks, and consensus clustering.

The issue of the right number of clusters, in the classical paradigm of looking only at the data structure, has received a considerable boost recently with distinguishing between "after clustering", "while clustering" and "before clustering" approaches, at least in the clustering framework oriented at minimizing the square error criterion. Moreover, further developments in the digital world lead to availability of various data related to different aspects of the same objects. This allows switching to a better criterion for the number of clusters: that number is right that leads to compatible results on the different aspects.

Community detection in networks, from 2000 on, generated two approaches: modularity criterion and spectral clustering involving the so-called Laplacian normalization of similarity data. Within the least-squares approximation approach both of them can be differently accommodated leading to yet another, although quite natural, "semi-average" clustering criterion.

Consensus clustering is a recent approach to integrating different clustering results. After introducing the basic concepts, I turn to reviewing a recent joint work with A. Shestakov, in which superiority of an implementation of a virtually unknown approach by Mirkin and Muchnik (1981, in Russian), also involving the semi-average criterion, has been demonstrated.

Thursday, 5 June
10:40-11:30
K-9

## Lecture 3.

# Luiz F. Autran M. Gomes "Robustness in Discrete Multi-Criteria Decision Analysis"

**Luiz F. Autran M. Gomes**

Professor of Management in Ibmec University, Rio de Janeiro, Brazil; Researcher of the National Research Council (CNPq) of Brazil; Member of the National Academy of Engineering (Brazil)

**Areas of expertise:** Operations Research, Decision Making, Decision Aids, Organizational Decision Making, Graduate and undergraduate teaching of Multicriteria Decision Aiding.

*Abstract*

Multi-Criteria Decision Analysis (MCDA) is the area of the Decision Sciences that focus on structuring, analyzing, modeling, solving, and recommending a solution to decision problems in the presence of multiple criteria. One important issue in MCDA has to do with Robustness Analysis in discrete MCDA. Although there is not a single definition accepted by the scientific community, we can conveniently refer to robustness as the ability of a solution to cope with uncertainties. Different sources of uncertainty interact in a decision problem, some reflecting more or less arbitrary choices of the decision analyst and others concerning external uncertainties. In this sense, it has been proposed that the robustness concern needs to be explicit in a problem such that the robustness analysis is driven by a specific aim. A new robustness analysis framework is proposed where robustness of a solution in a decision aiding process is measured by the distance from that solution to an expected outcome, chosen by the decision-aiding analyst. Therefore, the robustness concern concentrates on changes in criteria weights as well as in trade-off rates, as they are defined in a given MCDA method. Two main contributions are introduced: a local robustness measure, defined in terms of a distance among rankings; and a global robustness measure, as an adaptation of the minimax-regret rule to select a global robust solution.

# Parallel Sessions

## Presenter's information

The time allocated to oral presentation will be following:

Regular paper (parallel/special session): 20 minutes which include the time for discussion (usually 5 minutes)

PowerPoint (PPT or PPS) or Acrobat PDF slides (saved on Memory Flash) for presentation on a data projector are recommended for your talk at ITQM 2014.

Logistics, Technical Tools and Support:

- Laptop (Microsoft Windows OS)
- Laser Printer
- Digital Copier
- Color Scanner
- Video Projector

The entire HSE building has free Wi-Fi.

*Name of the Wi-Fi hotspot:* HSE

*Login:* hseguest

*Password:* hsepassword

# Detailed Schedule

## Special Sessions

### Special Session 01

**IT Enabled Economic Computing and Simulating**
**S01a**
Chair: Shouyang Wang and Xiaoguang Yang

Tue, 3 June 2014
14:00-16:00
Room 5309

1.  Willem Brauers, Edmundas Zavadskas and Simona Kildienè **"Was the Construction Sector in 20 European Countries Anti-Cyclical during the Recession Years 2008-2009 as measured by Multicriteria Analysis (MULTIMOORA)?"** (ID_136)

2.  Yudie Du, Yue Cai, Mingxin Chen, Wei Xu, Hui Yuan, Tao Li **"A novel divide-and-conquer model for CPI prediction using ARIMA, gray model and BPNN"** (ID_123)

3.  Toshitaka Fukiharu **"A simulation on the public good provision under various taxation systems"** (ID_75)

4.  Jing Gu **"The Performance of Science & Technology Investment and Finance Based on the support vector machine"** (ID_A8)

5.  Yi Hu, Dongmei Guo and Shouyang Wang **"Estimating returns to education of Chinese residents: Evidence from optimal model selection"** (ID_34)

6.  Hyoung-Yong Lee, Hyunchul Ahn, Heungki Kim and Jongwon Lee **"Comparative Analysis of Trust in Online Communities"** (ID_174)

**S01b**
Chair: Shouyang Wang and Xiaoguang Yang

Tue, 3 June 2014
16:20-18:20
Room 5309

1.  Bangwei Li, Wei Shang, Lin Huo and Shanying Xu **"Disposition effect in an Agent-based Financial Market Model"** (ID_101)

2.  Lin Li, Shuang Wang, Yifang Liu and Souyang Wang **"A New Idea of Study on the Influence Factors of Companies' Debt Costs in the Big Data Era"** (ID_80)

3.  Shuai Wang **"Forecasting direction of China security Index 300 movement with Least Squares Support Vector Machine"** (ID_127)

4.  Haizhen Yang, Suxiao Li, Yanyi Ye and Xiaoguang Yang **"Multi-Dimension Monitoring System for Regional Economy: Exploration and Practice in Xinjiang Autonomous Region"** (ID_52)

5.  Wei Yang, Yanmin Shao and Shouyang Wang **"An Empirical Analysis on Regional Technical Efficiency of Chinese Steel Sector Based on Network DEA Method"** (ID_91)

6.  Guihuan Zheng and Yu Wang **"Financial Conditions Index's Construction and Its Application on Financial Monitoring and Economic Forecasting"** (ID_8)

7. Zhou Zhou, Huiyan Dong and Shouyang Wang **"Intraday Volatility Spillovers between Index Futures and Spot Market: Evidence from China"** (ID_105)

## Special Session 02

**QM in Energy Economics and Electric Networks**
**S02**
Chair: Alexander Vasin and Alexander Belenky

Tue, 3 June 2014
14:00-16:00
Room 5312

1. Natalia Aizenberg **"Interaction of generation companies in the electricity market of Russia"** (ID_15)

2. Alexander Belenky **"Finding Optimal Production and Selling Strategies for an Electricity Generator in a Part of a Country's Electrical Grid"** (ID_175)

3. Ekaterina Daylova and Alexander Vasin **"Determination of transmission capacity for a two-node market"** (ID_26)

4. S.A. Gakh, O.V. Khamisov, S.V. Podkovalnikov **"Bilevel optimization approach to modeling electricity market under generating and transmission line capacity expansion"** (ID_A6)

5. Hongwei Gao, Leon Petrosyan and Artem Sedakov **"Strongly Time-Consistent Solutions for Two-Stage Network Games"** (ID_40)

6. Alexander Vasin **"Game-theoretic study of electricity market mechanisms"** (ID_23)

## Special Session 03

**QM in Finance and Banking**
**S03**
Chair: Feliks I. Ereshko, Alexander M. Karminsky

Tue, 3 June 2014
14:00-16:00
Room 5313

1. Vadim Arzaamasov and Henry Penikas **"A financial stability index for Israel"** (ID_145)

2. Liudmila Egorova **"Effectiveness of different trading strategies for price-takers"** (ID_24)

3. Benlan He, Yong Shi, Qian Wan and Xi Zhao **"Prediction of customer attrition of commercial banks based on SVM model"** (ID_66)

4. Alexander Karminsky and Alexander Kostrov **"Comparison of bank financial stability factors in CIS countries"** (ID_114)

5. Bin Wang and Wen Long **"Analysis on the effect of new futures contract coming into market: Taking the related metal futures in SHFE for example"** (ID_30)

6. Jiani Wang and Manhong Liu **"The Accuracy and Effectiveness of Securities Analysts' Pricing Forecast − Empirical Research based on A-share IPOs"** (ID_88)

## Special Session 04

**Fuzzy Preference Modelling, Decision Making and Consensus**
**S04a**
Chair: Enrique Herrera-Viedma, Hamido Fujita, Francisco Chiclana, Francisco Javier Cabrerizo, Ignacio Javier Pérez

Wed, 4 June 2014
15:00-16:40
Room 5310

1. Juan Bernabé-Moreno, Álvaro Tejeda-Lorente, Carlos Porcel and Enrique Herrera-Viedma **"Leveraging localized Social Media Insights for early warning systems"** (ID_157)

2. Manuel Jesus Cobo Martin, M.A. Martínez, M. Gutiérrez-Salcedo, M. Herrera and Enrique Herrera-Viedma **"Identifying Citation Classics in Fuzzy Decision Making Field using the Concept of H-Classics"** (ID_86)

3. Hamido Fujita and Eugene Ko **"The conditional fuzzy densities of subjective decision support systems for WCY 2012"** (ID_121)

4. Alexander Ivanov, Daniel Karabekyan, Vyacheslav Yakuba **"Using Computer Modeling for Estimating Manipulability of Social Choice Rules"** (ID_A7)

5. Álvaro Tejeda-Lorente, Juan Bernabé-Moreno, Carlos Porcel and Enrique Herrera-Viedma **"Integrating quality criteria in a fuzzy linguistic recommender system for digital libraries"** (ID_155)

**S04b**  Wed, 4 June 2014
Chair: Enrique Herrera-Viedma, Hamido Fujita, Francisco Chiclana,  17:00-18:40
Francisco Javier Cabrerizo, Ignacio Javier Pérez  Room 5310

1. Helen M. Moshkovich and Alexander I. Mechitov **"Review of Current Studies in Verbal Decision Analysis (VDA)"** (ID_A2)

2. Ignacio Javier Pérez, Francisco Javier Cabrerizo, Juan Antonio Morente-Molinera, Raquel Ureña and Enrique Herrera-Viedma **"Reaching consensus in digital libraries: a linguistic approach"** (ID_69)

3. Raquel Ureña, Francisco Chiclana, Sergio Alonso, Juan Antonio Morente-Molinera and Enrique Herrera-Viedma **"On incomplete fuzzy and multiplicative preference relations in Multi person decision making"** (ID_117)

4. Alexey Zakharov **"The majority preference relation based on cone preference relations of the decision makers"** (ID_129)

5. Hengjie Zhang, Yucheng Dong and Yinfeng Xu **"An analysis of several novel frameworks and models in the consensus reaching process"** (ID_38)

# Special Session 05
**QM and Mechanism Design**  Wed, 4 June 2014
**S05**  11:50-13:30
Chair: Dmitry A. Novikov  Room 5310

1. Abdykappar Ashimov, Yuriy Borovskiy, Nikolay Borovskiy, Zheksenbek Adilov, Rakhman Alshanov and Bahyt Sultanov **"Evaluation of optimal international economic policy based on both the parametric control theory and global computable general equilibrium model"** (ID_103)

2. Felisa Cordova, Claudia Duran and Raquel Galindo **"Comparative analysis of ICT in public–private systems: The OHIM case in the European Union and the Internal Revenue System in Chile"** (ID_19)

3. Hogwei Gao, Jinsong Hu, Vladimir Mazalov, Anna Shchiptsova, Li Song and Julia Tokareva **"Location-Price Game-Theoretic Model and Applications"** (ID_111)

4. Sofya Kiselgof **"Matching markets and interval order prefences: strategy-proofness vs efficiency"** (ID_119)

## Special Session 06
**Logistics and optimization**
**S06a**
Chair: Panos M. Pardalos, Mikhail Batsyn

Wed, 4 June 2014
11:50-13:30
Room 5309

1. Mikhail Batsyn and Alexander Ponomarenko **"Heuristic for a real-life truck and trailer routing problem"** (ID_116)

2. Alexander Belov and Sergey Slastnikov **"A metaheuristic approach for the problem of motor fuel distribution"** (ID_25)

3. Haris Gavranović, Alper Barut, Gürdal Ertek, Orkun Berk Yüzbaşıoğlu, Osman Pekpostalcı and Önder Tombuş **"Optimizing the electric charge station network of EŞARJ"** (ID_4)

4. Anqiang Huang, Han Qiao and Shouyang Wang **"Forecasting Container throughputs with Domain Knowledge"** (ID_96)

5. Georgios K.D. Saharidis, George Kolomvos, George Liberopoulos **"Modeling and Solution Approach for the Environmental Traveling Salesman Problem"** (ID_A9)

**S06b**
Chair: Øyvind Halskau

Wed, 4 June 2014
15:00-16:40
Room 5309

1. Øyvind Halskau **"On routing and safety using helicopters in a hub and spoke fashion in the offshore petroleum's industry"** (ID_172)

2. Yauhen Maisiuk and Irina Gribkovskaia **"Fleet sizing for offshore supply vessels with stochastic sailing and service times"** (ID_138)

3. Eugen Sopot and Irina Gribkovskaia **"Routing of supply vessels to offshore installations with deliveries and pickups of multiple commodities"** (ID_133)

4. Katerina Shaton **"Incentive problem in gas transport infrastructure development on the Norwegian continental shelf"** (ID_65)

**S06c**
Chair: Panos M. Pardalos, Mikhail Batsyn

Wed, 4 June 2014
17:00-18:40
Room 5309

1. Roman Shangin and Panos Pardalos **"Heuristics for Minimum Spanning k-tree Problem"** (ID_163)

2. Pavel Sukhov, Mikhail Batsyn and Petr Terentev **"A dynamic programming heuristic for optimizing slot sizes in a warehouse"** (ID_115)

3. Todosijevic R., Hanafi S., Mladenovic N. and Urosevic D. **"Solving the uncapacitated *r*-allocation *p*-hub median problem by General VNS"** (ID_A4)

4. Ming-Miin Yu and Li-Hsueh Chen **"Dynamic performance assessment of bus transit with the multi-activity network structure"** (ID_A3)
   Author(s):

5. Todosijevic R., Mjirda A., Hanafi S. and Mladenovic N. **"Deterministic use of several neighborhoods in local search: an empirical study on traveling salesman problem"** (ID_A10)

## Special Session 07

**Soft Computing Methods in Quantitative Management and Decision Making**
**S07a**
Chair: Florin Gheorghe Filip, Ioan Dzitac

Wed, 4 June 2014
11:50-13:30
Room 5312

1. Otilia Elena Dragomir, Dragomir Florin and Radulescu Marian **"Matlab Application of Kohonen Self- Organising Map to Classify Consumers' Load Profiles"** (ID_72)

2. Irfan Ertugrul and Tayfun Oztas **"Business mobile-line selection in Turkey by using fuzzy TOPSIS, one of the multi-criteria decision methods"** (ID_10)

3. Elly Amani Gamukama **"A descriptive model for aligning the Internet stakeholders' goals in the context of development in LDCs"** (ID_132)

4. Ion Ivan, Cristian Ciurea and Alin Zamfiroiu **"Metrics of collaborative business systems in the knowledge-based economy"** (ID_60)

5. Dorota Kuchta **"A new concept of project robust schedule – use of buffers"** (ID_141)

**S07b**
Chair: Florin Gheorghe Filip, Ioan Dzitac

Wed, 4 June 2014
15:00-16:40
Room 5312

1. Alexander Lepskiy **"On the stability of comparing histograms with help of probabilistic methods"** (ID_89)

2. Sorin Nadaban and Ioan Dzitac **"Special Types of Fuzzy Relations"** (ID_84)

3. Juan Sepúlveda and Ivan Derpich **"Automated reasoning for supplier performance appraisal in supply chains"** (ID_142)

4. Sergey Shvydun and Ekaterina Kalugina **"An Effective personnel selection model"** (ID_167)

5. Victor Zavgorodniy, Pavel Lukyanov and Stanislav Nazarov **"The Selection Algorithm of Mechanisms for Management of Information Risks"** (ID_68)

6. Elena Malyutina and Vladimir Shiryaev **"Time Series Forecasting using Nonlinear Dynamic Methods and Identification of Deterministic Chaos"** (ID_150)

# Special Session 08

**Formal Concept Analysis and Rough Set Theory for Information Technologies and Quantitative Management**

1. Aleksey Buzmakov, Amedeo Napoli and Sergei O. Kuznetsov **"Is Concept Stability a Measure for Pattern Selection?"** (ID_135)

2. Dmitry Gnatyshak **"Greedy Modifications of OAC-triclustering algorithm"** (ID_170)

3. Fedor Krasnov, Evgeniya Vlasova and Rostislav Yavorsky **"Connectivity analysis of computer science centers based on scientific publications data for major Russian cities"** (ID_131)

4. Alena Lihonosova and Alexandra Kaminskaya **"Using formal concept analysis for finding the closest relatives among a group of organisms"** (ID_126)

5. Alexey Neznanov, Dmitry Ilvovsky and Andrew Parinov **"Advancing FCA Workflow in FCART System for Knowledge Discovery in Quantitative Data"** (ID_33)

1. Jose Manuel Rodriguez Jimenez, Pablo Cordero Ortega, Angel Mora and Manuel Enciso **"Negative attributes and implications in Formal Concept Analysis"** (ID_112)

2. Fedor Strok **"Modeling text similarity with Parse Thickets"** (ID_149)

3. Roman Zhuk and Dmitry Ignatov **"Concept Learning from Triadic Data"** (ID_137)

# Special Session 09

1. D Benta, G Bologa and I Dzitac **"E-learning Platforms in Higher Education. Case Study"** (ID_177)

2. Tatiana Gavrilova and Margarita Gladkova **"Big Data Structuring: The Role of Visual Models and Ontologies"** (ID_54)

3. Luis Omar Herrera Prada **"Determinants of graduation rate and graduation time in higher education in Colombia 1998-2010"** (ID_A1)

4. Feng Liu and Yong Shi **"The Search Engine IQ Test based on the Internet IQ Evaluation Algorithm"** (ID_161)

5. Nadezhda Titova and Aleksey Shutov **"Predictive model of strategic development of a university"** (ID_70)

# Workshops

## Workshop 01

**Multicriteria Analysis with Imprecise Information and Criteria Interaction**
**W01**
Chair: Luiz Flavio Autran Monteiro Gomes, Alexander E. Lepskiy

Tue, 3 June 2014
16:20-18:20
Room 5313

1. Mikhail Dmitriev and Vadim Lomazov **"Sensitivity of long-term production projects from expert judgments"** (ID_118)

2. Renato Krohling and André Pacheco **"Interval-valued intuitionistic fuzzy TODIM"** (ID_37)

3. Luiz Flavio Autran Monteiro Gomes, Maria Augusta Machado Soares and Luis Alberto Duncan Rangel **"Multicriteria analysis of natural gas destination in Brazil: A comparison of TODIM against the use of the Choquet Integral"** (ID_57)

4. Luiz Flavio Autran Monteiro Gomes, Maria Augusta Machado, Luis Rangel and Renato Monte Araujo **"Using the Choquet Integral to Improve Systems Usability: A multicriteria analysis"** (ID_90)

5. Ali Asghar Anvary Rostamy, Meysam Shaverdi and Iman Ramezani **"Application of Fuzzy AHP approach for financial performance evaluation of Iranian petrochemical sector"** (ID_146)

6. Alberto Vega, Juan AguarÓn, Jorge GarcÍa-Alcaraz and José María Moreno-JimÉnez **"Notes on Dependent Attributes in TOPSIS"** (ID_54)

## Workshop 02

**Intelligent Decision Making and Extenics based Innovation**
**W02a**
Chair: Xingsen Li, Haolan Zhang, Bin Shen and Yanbin Liu

Tue, 3 June 2014
14:00-16:00
Room 5310

1. Vadim Agievich and Kirill Skripkin **"Enterprise Architecture Migration Planning Using the Matrix of Change"** (ID_36)

2. Ailing Chen, Wei Liu and Jun Zhang **"On the systematic Method to Enhance the Epiphany ability of individual"** (ID_107)

3. Ahmad Dargi, Ali Anjomshoae, Masoud Rahiminezhad Galankashi, Ashkan Memari and Masine Md. Tap **"Supplier Selection: A Fuzzy-ANP Approach"** (ID_102)

4. Dimitris Despotis and Gregory Koronakos **"Efficiency assessment in two-stage processes: A novel network DEA approach"** (ID_49)

5. Seyed Mojtaba Hosseini Bamakan and Peyman Gholami **"A Novel Feature Selection Method Based on an Integrated Data Envelopment Analysis and Entropy Model"** (ID_93)

**W02b**
Chair: Xingsen Li, Haolan Zhang, Bin Shen and Yanbin Liu

Tue, 3 June 2014
16:20-18:20
Room 5310

1. Fangyao Liu, Shiu-Ren Chao, Xingsen Li and Zhiwei Yu **"Quantitative Analysis of Reference Help Desk Utilization Trend"** (ID_61)

2. Mengjing Ni, Li Yang, Jinzi Chen, Hong Chen, Xingsen Li and Zhiwei Yu **"How to Improve Divergent Thinking Capability by Information Technology and Extenics"** (ID_27)

3. Min Yang and Rajan Alex **"Innovation Explore of Entrepreneurship Education Based on Extenics"** (ID_122)

4. Zhiwei Yu **"A Share Learning Framework for Innovation Education: Improving Creative Thinking Capability from Daily Life"** (ID_58)

5. Wei Wei Zhu, Yang Yang Tan and Xun Guan **"Application of rhombic thinking mode in highway slope greening design"** (ID_160)

## Workshop 03
**Intelligent Knowledge Management**

**W03**
Chair: Jifa Gu, Lingling Zhang

Wed, 4 June 2014
17:00-18:40
Room 5312

1. Gökhan Engin, Burak Aksoyer, Melike Avdagic, Damla Bozanlı, Umutcan Hanay, Deniz Maden and Gürdal Ertek **"Rule-based expert systems for supporting university students"** (ID_5)

2. Jifa Gu and Lingling Zhang **"Data, DIKW, Big data and Data science"** (ID_120)

3. Jing Li, Lingling Zhang, Fenhua Li and Fan Meng **"A recommendation approach based on link prediction and domain knowledge in retail transactions"** (ID_128)

4. Alexander Razorenov and Vladimir Fomichov **"The Design of a Natural Language Interface for File System Operations on the Basis of a Structured Meanings Model"** (ID_147)

## Workshop 04
**Risk Correlation Analysis and Risk Measurement**

**W04a**
Chair: Jianping Li, Yi Peng, Xiaodong Lin, Rongda Chen, Henry Penikas

Wed, 4 June 2014
15:00-16:40
Room 5313

1. Chunbing Bao, Jianping Li, Dengsheng Wu, Xiaoqian Zhu, Changzhi Liang and Chang Liu **"Optimization of Integrated Risk in Commercial Banking Based on Financial Statements"** (ID_76)

2. Jia Liu and Zhiping Chen **"Regime-dependent robust risk measures with application in portfolio selection"** (ID_55)

3. Henry Penikas, W.Travis Selmier Ii and Kseniia Vasileva **"Financial Risk as a Good"** (ID_21)

4. Li Shuai, Chao Xu, Hui Lai and Zongfang Zhou **"Research on Simulation of Credit Risk of Credit Card Based on Multi-Agent"** (ID_78)

5. Li Shuai, Yang Yang and Zongfang Zhou **"Research on Impact of Moral Hazard on Individual Credit Risk"** (ID_87)

**W04b**
Chair: Jianping Li, Yi Peng, Xiaodong Lin, Rongda Chen, Henry Penikas

Wed, 4 June 2014
17:00-18:40
Room 5313

1. Fenghua Wen, Jihong Xiao, Zhifang He, Xu Gong and Rongda Chen **"Stock Price Prediction Based on SSA and SVM"** (ID_92)

2. Xiaoyang Yao, Xiaolei Sun, Yuying Yang, Dengsheng Wu and Xun Liang **"Features Extraction and Reconstruction of Country Risk based on Empirical EMD"** (ID_41)

3. Huanhuan Yu, Rongda Chen and Guoping Zhang **"A SVM Stock Selection Model within PCA"** (ID_63)

4. Guoxing Zhang, Peng Liu, Xiulin Gao and Mingxing Liu **"Companies' behavior of carbon emission reduction at the risk of oil price volatility"** (ID_47)

## Workshop 05

**Optimization-based Data Mining**  Thu, 5 June 2014
**W05a**  11:45-13:25
Chair: Yingjie Tian, Zhiquan Qi, Yong Shi, Boris Mirkin  Room 5310

1. Daji Ergu and Mingshan Zhang **"Consistency simulation and optimization for HPIBM model in emergency decision making"** (ID_85)

2. Victor Gordunovsky **"An exponential approximation algorithm in linear programming"** (ID_97)

3. Xuchan Ju, Manjin Cheng, Yuhong Xia, Fuqiang Quo and Yingjie Tian **"Support Vector Regression and Time Series Analysis for the Forecasting of Bayannur's Total Water Requirement"** (ID_79)

4. He Na, Luo Haibiao and Wang Bingqiang **"Multi-task parallel algorithm for DSRC"** (ID_173)

**W05b**  Thu, 5 June 2014
14:00-15:00
Chair: Yingjie Tian, Zhiquan Qi, Yong Shi, Boris Mirkin  Room 5310

1. Zhiquan Qi **"Parallel Regularized Multiple-Criteria Linear Programming"** (ID_13)

2. Yuan-Hai Shao, Zhen Wang, Zhi-Min Yang and Nai-Yang Deng **"Weighted linear loss support vector machine for large scale problems"** (ID_94)

3. Qin Zhang, Manjin Cheng, Yuhong Xia and Fuqiang Quo **"Correlation analysis for multiple-dimensional properties of water resources"** (ID_82)

## Workshop 06

**The First Workshop on Data Mining and Social Network Analysis**  Thu, 5 June 2014
**W06a**  11:45-13:25
Chair: Peng Zhang, Svetlana Maltseva  Room 5312

1. Limeng Cui and Yong Shi **"A Method Based on One-Class SVM for News Recommendation"** (ID_45)

2. Wei Deng, Rajvardhan Patil, Lotfollah Najjar, Yong Shi and Zhengxin Chen **"Incorporating Community detection and Clustering Techniques into Collaborative Filtering Model"** (ID_14)

3. Shan Feng, Ruifang Liu, Ruisheng Shi, Weiping Huang and Wenbin Guo **"Weighted Graph Clustering for Community Detection of Large Social Networks"** (ID_16)

4. Yao Lu, Peng Zhang and Yanan Cao **"On the Frequency Distribution of Retweets"** (ID_110)

**W06b**
Chair: Peng Zhang, Svetlana Maltseva

Thu, 5 June 2014
14:00-15:00
Room 5312

1. Dmitry Novikov **"Models of Network Excitation Control"** (ID_31)

2. Minghe Sun, Zhen-Yu Chen and Zhi-Ping Fan **"A Multi-task Multi-kernel Transfer Learning Method for Customer Response Modeling in Social Media"** (ID_35)

3. Yuyan Sun, Limin Sun, Xinyun Zhou and Hongsong Zhu **"VAPA: Vehicle activity patterns analysis based on Automatic Number Plate Recognition System Data"** (ID_12)

## Workshop 07

**High Performance Data Analysis**
**W07**
Chair: Fuad Aleskerov, Vassil Alexandrov, Ying Liu

Wed, 4 June 2014
11:50-13:30
Room 5313

1. Alper Bilge, Zeynep Ozdemir and Huseyin Polat **"A Novel Shilling Attack Detection Method"** (ID_28)

2. Vyacheslav V. Chistyakov **"On the superposition of the Borda and threshold preference orders for three-graded rankings"** (ID_154)

3. Alexey Myachin **"Analysis of global data education and patent activity using new methods of pattern analysis"** (ID_71)

4. Vangipuram Radhakrishna, C. Srinivas and C.V. Gururao **"Clustering and Classification of Software Components for Efficient Component Retrieval and Building Component Reuse Libraries - A Feature Vector Based Approach"** (ID_156)

## Workshop 08

**Semantic Learning and Intelligent Awareness**
**W08a**
Chair: Boris Mirkin, Hu Yue, Zhou Xiaofei

Wed, 4 June 2014
15:00-16:40
Room 5314

1. Quan Bai, Gang Xiong, Yong Zhao and Longtao He **"Analysis and Detection of Bogus Behavior in Web Crawler Measurement"** (ID_164)

2. Amel Benabbou and Safia Nait Bahloul **"Specification-based approach for denotational semantic of orthogonal object/relational DBMS"** (ID_59)

3. Boris Chernikov and Alexander Karminsky **"Specificities of Lexicological Synthesis of Text Documents"** (ID_67)

4. Ekaterina Chernyak and Boris Mirkin **"A method for refining a taxonomy by using annotated suffix trees and Wikipedia resources"** (ID_32)

5. Jiguang Liang, Ping Liu, Jianlong Tan and Shuo Bai **"Sentiment Classification Based on AS-LDA Model"** (ID_77)

**W08b**

Chair: Boris Mirkin, Hu Yue, Zhou Xiaofei

1. Yuan Man **"Feature extension for short text categorization using frequent term sets"** (ID_99)

2. Mikhail Orlov and Boris Mirkin "**A concept of multicriteria stratification: a definition and solution"** (ID_42)

3. Phridvi Raj M.S.B, Gururao C.V and Chintakindi Srinivas **"Clustering Text Data Streams - A Tree Based Approach with Ternary Function and Ternary Feature Vector"** (ID_144)

4. Qiu Tang, Lei Jiang, Xin-Xing Liu and Qiong Dai **"A real-time updatable FPGA-based architecture for fast regular expression matching"** (ID_125)

5. Fangjiao Zhang and Lidong Zhai **"Sinkhole attack detection based on redundancy mechanism in wireless sensor networks"** (ID_104)

6. Xiaofei Zhou, Yue Hu and Li Guo **"Text Categorization Based on Clustering Feature Section"** (ID_62)

7. Sunantha Sodsee **"Predicting Caesarean Section by Applying Nearest Neighbor Analysis"** (ID_1)

## Workshop 09

**E-health and Social Computing**
**W09a**
Chair: Jing He, Hai Liu, Fernando Martin Sanchez, Paulo De Souza

1. Stanislav Berelavichus, Andrei Krieger and Nadezhda Titova **"The Optimal Application of Robotic-surgical Complexes (Systems) in Abdominal Surgery: the Logics and Methodology of Research"** (ID_74)

2. Jiahua Du, Gansen Zhao, Haolan Zhang, Jing He and Xiaoli Jin **"A Novel Method in Extracranial Removal of Brain MR Images"** (ID_176)

3. Haruko Iwata, Shoji Hirano and Shusaku Tsumoto **"Construction of Clinical Pathway based on Similarity-based Mining in Hospital Information System"** (ID_169)

4. Yuekun Ma, Dezheng Zhang, Aziguli Wulamu and Yonghong Xie **"The Core Drugs Analysis Based on Social Network Analysis about Traditional Chinese Medicine Records Semantic Relation"** (ID_53)

**W09b**
Chair: Jing He, Hai Liu, Fernando Martin Sanchez, Paulo De Souza

1. Madhu G, Rajinikanth T.V and Govardhan A **"Improve the classifier accuracy for continuous attributes in biomedical datasets using a new discretization method"** (ID_100)

2. Zhijun Xie, Guangyan Huang and Jing He **"A Nest-Based WBAN Scheduling for Mobile Wireless Body Area Networks"** (ID_165)

# Social Program

## Boat Trip on the Moscow River

*Address:* Moscow, Frunzenskaya naberezhnaya 46

The boat trip starts from "Frunzenskaya" landing which is located within 30 minutes walking distance from the Conference venue (see the map below). More than a half of the route passes through Gorky Park, Andreyevsky Bridge and Frunzenskaya Quay.
**The departure time** of the boat is **19:00**.

## Gala Dinner at "AiF" press-mansion

Thursday
5 June 2014

*Address:* Moscow, ulitsa Myasnitskaya 42.

The gala dinner will be held at classic old mansion of the early XIX century built by the architect Matvei Kazakov.

The meet of the guests is at **18:30** in front of the "AiF" press-mansion.
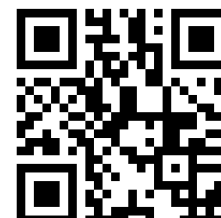
# Contact Information

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## Emergency calls

| Service | Telephone |
|---|---|
| **Emergency number (all agencies)** | **112** |
| National Emergency Telephone Number (24/7) | 101 |
| Sklifosovsky Institute of Emergency Care (main emergency hospital in Moscow with a private ambulance service) | +7(495) 680 6722 |
| Medical Emergencies (Ambulance,*Skoraya pomoshch*) | 103 |
| Police (*Politsiya*) | 102 |
| Moscow City Police | +7(495) 200 9305 |
| Fire (*Pozharnoy Ohrany*) | 101 |

# Where to eat
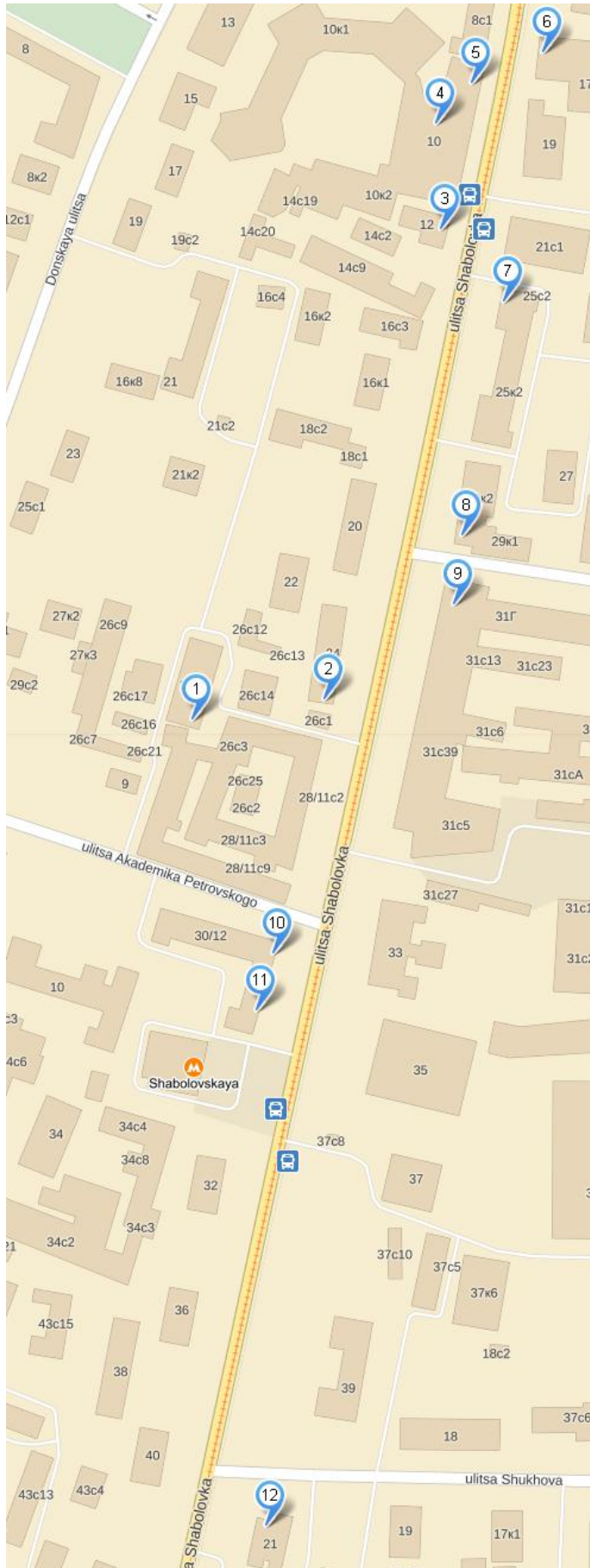


1 – Conference Venue, Dining hall at National Research University Higher School of Economics (HSE).
*Address:* Shabolovka str. 26/2.

2 – Cheburechnaya "Sovietski vremena"
*Address:* ulitsa Shabolovka, 26,
Cuisine: Russian

3 – Subway
*Address:* ulitsa Shabolovka, 26,
Cuisine: fast-food.

4 – Dining cafe in the "Metromarket" shopping center.
*Address:* Shabolovka St, 10/2

5 – Alai Teahouse Bazaar
*Address:* Shabolovka St, 10/2
Cuisine: Uzbek

6- Trattoria-"Venezia"
*Address:* Shabolovka St, 17
Cuisine: Italian

7 – Tanuki
*Address:* Shabolovka St, 25/2
Cuisine: Japanese

8 – FarshMag
*Address:* Shabolovka St, 29/2
Cuisine: Bakery and meatballs

9 – StarHit cafe
*Address:* Shabolovka St, 31
Cuisine: Coffee and appetizers.

10 – Coffee House
*Address:* Shabolovka St, 30/12
Cuisine: Coffee and appetizers

11 – Shokoladnitsa
*Address:* Shabolovka St, 30/12
Cuisine: Coffee and appetizers

12 – I like bar
*Address:* Shabolovka St, 57
Cuisine: Bar, International

# Metro Map



## Conference venue

Metro stations are open for passengers daily from 6 a.m. to 1 a.m.
Regular train operation with the minimal headway of **90 seconds** is provided.
*Passengers must pay the fare every time they enter metro.*

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