



VU Institute of Mathematics and Informatics Annual Report 2014



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Director – Prof. Dr. Habil. *Gintautas Dzemyda*

STAFF

85 research fellows (17 habilitated doctors and 68 doctors),
50 doctoral students

RESEARCH AREAS

DOCTORAL DISSERTATIONS MAINTAINED IN 2014

MAIN CONFERENCES ORGANIZED IN 2014

DEPARTMENTS OF THE INSTITUTE

- [Department of Informatics Methodology](#)
- [Department of Numerical Analysis](#)
- [Department of Probability Theory and Statistics](#)
- [Department of Recognition Processes](#)
- [Department of Software Engineering](#)
- [Department of Stochastic Processes](#)
- [Department of Systems Analysis](#)

RESEARCH AREAS

Integrated Development of Mathematics, Informatics and Information Technologies for the Knowledge Society Advanced Products and Services

DOCTORAL DISSERTATIONS MAINTAINED IN 2014

Haroldas GIEDRA – *in Informatics (09 P)* – has defended on December 22th,
Scientific Supervisor: **Assoc. Prof. Dr. Habil. Regimantas Ričardas Pliuškevičius**;
Dissertation: [“Proof System for Logic of Correlated Knowledge”](#) (abstract)

Eglė JASUTĖ – *in Informatics (09 P)* – has defended on December 1th,
Scientific Supervisors: **Prof. Dr. Habil. Antanas Žilinskas** (2010–2012),
Prof. Dr. (HP) Valentina Dagienė (2012–2014 m.) ;
Dissertation: [“Visualization Model for the Constructionist Teaching and Learning of Geometry”](#) (abstract)

Ingrida VAIČIULYTĖ – *in Informatics (09 P)* – has defended on November 26th,
Scientific Supervisor: **Prof. Dr. Habil. Leonidas Sakalauskas**;
Dissertation: [“Study and Application of Markov Chain Monte Carlo Method”](#) (abstract)

Aidas BALČIŪNAS – *in Mathematics (01 P)* – has defended on October 28th,
Scientific Supervisor: **Prof. Dr. Habil. Antanas Laurinčikas**;
Dissertation: [“Mellin Transforms of Dirichlet L-Functions”](#) (abstract)

Darius BARONAS – *in Informatics (09 P)* – has defended on September 30th,
Scientific Supervisor: **Prof. Dr. Habil. Antanas Žilinskas**;
Scientific Consultant: **Prof. Dr. Habil. Feliksas Ivanauskas**;
Dissertation: [“Computer Aided Modelling of Multilayer Biosensors and Optimization Based Processing of Amperometric Measurements”](#) (abstract)

Karolina PIASECKIENĖ – *in Mathematics (01 P)* – has defended on September 17th,
Scientific Supervisor: **Prof. Dr. (HP) Marijus Radavičius**;
Dissertation: [“The Statistical Methods in the Analysis of the Lithuanian Language Complexity”](#) (abstract)

Laura RINGIENĖ – *in Informatics Engineering (07 T)* – has defended on September 5th,
Scientific Supervisor: **Prof. Dr. Habil. Gintautas Dzemyda**;
Dissertation: [“Hybrid Neural Network for Multidimensional Data Visualization”](#) (abstract)

Valerijonas DUMSKIS – *in Informatics Engineering (07 T)* – has defended on June 25th,
Scientific Supervisor: **Prof. Dr. Habil. Leonidas Sakalauskas**;
Dissertation: [“Analysis and Application of Methods for Search of Stochastic Equilibrium”](#) (abstract)

Darius DRUNGILAS – *in Informatics Engineering (07 T)* – has defended on June 17th,
Scientific Supervisor: **Prof. Dr. (HP) Dalė Dzemydienė**;
Dissertation: [“Integration of Methods of Affect Recognition and Adaptive Control of Services in the Enclosed Environment Microclimate Control System”](#) (abstract)

Jūratė URBONIENĖ – *in Informatics Engineering (07 T)* – has defended on June 13th,
Scientific Supervisor: **Prof. Dr. (HP) Valentina Dagienė**;
Dissertation: [“Design of Adaptive Programming Teaching Tools”](#) (abstract)

Gintaras VAIRA – in *Informatics Engineering (07 T)* – has defended on June 10th,
Scientific Supervisor: *Assoc. Prof. Dr. Olga Kurasova*;
Dissertation: [“Genetic Algorithm for Vehicle Routing Problem”](#) (abstract)

Igor KATIN – in *Informatics Engineering (07 T)* – has defended on May 28th,
Scientific Supervisor: *Prof. Dr. Habil. Jonas Mockus*;
Dissertation: [“On Development and Investigation of Stock-Exchange Model”](#) (abstract)

Loreta SAVULIONIENĖ – in *Informatics Engineering (07 T)* – has defended on May 12th,
Scientific Supervisor: *Prof. Dr. Habil. Leonidas Sakalauskas*;
[“Association Rules Search in Large Data Bases”](#) (abstract)

Dainius DZINDZALIETA – in *Mathematics (01 P)* – has defended on April 30rd,
Scientific Supervisors: *Dr. Habil. Vidmantas Kastytis Bentkus* (2009–2010),
Prof. Dr. (HP) Saulius Norvidas (2011–2013); Scientific Consultant: *Prof. Dr. Frydrich Gotze*;
[“Tight Bernoulli Tail Probability Bounds”](#) (abstract)

Anita JUŠKEVIČIENĖ – in *Informatics Engineering (07 T)* – has defended on April 23rd,
Scientific Supervisor: *Prof. Dr. (HP) Valentina Dagienė*;
[“Research on Web 2.0 Technologies for Education”](#) (abstract)

Gintautas JAKIMAUSKAS – in *Informatics (09 P)* – has defended on April 15th,
Scientific Consultant: *Prof. Dr. Habil. Leonidas Sakalauskas*;
[“Analysis and Application of Empirical Bayes Methods in Data Mining”](#) (abstract)

MAIN CONFERENCES ORGANIZED IN 2014

- 6th International Seminar [“Data Analysis Methods for Software Systems”](#), December 4–6, 2014, Druskininkai, Lithuania
- 5th International doctoral Consortium [“Informatics and Informatics Engineering Education Research”](#), December 2–6, 2014, Druskininkai, Lithuania
- International Conference on Olympiads in Informatics, July 13–20, 2014, Taipei, Taiwan
- 11th International Vilnius Conferene on [Probability Theory and Mathematical Statistics](#) June 30 – July 4, 2014, Vilnius, Lithuania
- 10th International Workshop "Bebras" on Developing Tasks for CS Education and Open Conference on Best Practice in Informatics at Schools, June 1–7, 2014, Druskininkai-Vilnius, Lithuania
- Baltic Olympiad on Informatics, May 26–30, 2014, Palanga, Lithuania

DEPARTMENT OF INFORMATICS METHODOLOGY

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Head – Prof. Dr. Valentina Dagiene

STAFF

Principal researchers: Prof. Dr. (HP) Valentina Dagiene

Researchers: Dr. Tatjana Jevsikova, Dr. Jevgenij Kurilov (until 2014-06-30), Dr. Silvija Šerikoviene (until 2014-06-30), Dr. Inga Žilinskienė

Specialists: Daumilas Ardickas, Viktoras Dagys, Dr. Eglė Jasutė, Dr. Svetlana Kubilinskiene (until 2014-06-30), Dr. Jūratė Skūpienė

Analyst: Eimantas Pėlikis

Affairs manager: Giedrė Svetikienė

Affiliated Senior Researchers: Doc. Dr. Gintautas Grigas, Dr. Lina Markauskaitė

Doctoral students: Lina Cibulskaitė, Vladimiras Dolgopolas, Daina Gudonienė, Eglė Jasutė, Anita Juškevičienė, Airina Savickaitė, Gabrielė Stupurienė, Jūratė Urbonienė

RESEARCH INTERESTS

Informatics and engineering solutions for technology enhanced learning.

Software (especially educational one) localisation and adaptations to Lithuanian language.

Analysing learning and teaching processes using information technology.

Investigating students' understandings and experiences of programming concepts and processes.

Analysing software internationalisation and establishing criteria.

Systematising the main computer terms and phrases of localised software, developing vocabularies and dictionaries of computer terminology.

Preparing specialised tools to support teaching and learning in programming, including semi-automatic assessment and feedback tools, program animation and simulation tools.

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Informatics and engineering solutions for technology enhanced learning.

Software localisation and adaptations to Lithuanian language. Prof. V. Dagiene, 2012–2014.

Main results: learning objects personalisation based on semantic web technologies has been investigated; semi-automatic assessment method of programming assignments has been created; personalised learning scenario optimisation method using swarm-based approach has been created; text input on mobile devices from cultural and educational perspectives has been investigated.

Main publications:

1. Kurilovas, E.; Kubilinskiene, S.; Dagiene, V. Web 3.0 – Based Personalisation of Learning Objects in Virtual Learning Environments. // *Computers in Human Behavior*, **30**, 2014, pp. 654–662

2. Dagienė, V., Skūpas, B., Kurilov, J. Programming assignments in virtual learning environments: developments and opportunities for engineering education // *International journal of engineering education*. Dublin: Tempus Publications. ISSN 0949-149X. 2014 vol. 30, no 3, pp. 644-653.
3. Kurilovas, E.; Zilinskiene, I.; Dagiene, V. Recommending Suitable Learning Scenarios According to Learners' Preferences: An Improved Swarm Based Approach. // *Computers in Human Behavior*, **30**, 2014, pp. 550–557.
4. Dagienė, V., Grigas, G., Jevsikova, T. Text input on mobile devices from cultural and educational aspects. *Informatica*, vol. 25, no. 3, 2014. ISSN 0868-4952 p. 415-424.

National Research Projects

EU structural funds. **Software, relevant for the society, localisation and creation of software tools**. No. VP2-3.I-IVPK-12-K-01-004/ LSS-180000-642 (2012.03.30–2014.10.30)

As a result of the project, 5 computing dictionaries (Normative computing glossary, Encyclopaedic computing dictionary, English-Lithuanian computing dictionary, Dictionary of phrases of computing lexis, Thematic dictionary of computing) and translation memory has been created, 4 software packages have been localised (e-portfolio system Mahara, virtual learning environment Claroline, client management system VTiger, accountancy system TurboCash).

International Research Projects

F7-SCIENCE-IN-SOCIETY-2012-1 Mathematics and science for life – MaScil. Consortium Agreement for the Project *Mascil* 2013-06-12 Nr. 320.693, Coordinator: Pädagogische Hochschule Freiburg (Germany), Partners: Austria, Greece, Netherlands, Spain, Lithuania, Cyprus, United Kingdom, Czech Republic, Norway, Germany, Bulgaria, Romania, Turkey.

Lifelong Learning Programme, Improving School Governance using an Action Learning Approach – IGUANA. 527856-LLP-1-2012-1-PT-COMENIUS-CMP. Coordinator: Universidade Católica Portuguesa (UCP) (Portugal). Partners: Portugal, United Kingdom, Greece, Lithuania, Ireland.

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

Aalto university, Finland
 University of Eastern Finland of Joensuu and Kuopio
 Freie Universitaet Berlin, Germany
 Radboud University Nijmegen, The Netherlands
 Lithuanian Computer Society

OTHER SCIENTIFIC ACTIVITIES

Prof. V. Dagienė

- Editor-in-Chief of two international journals “Informatics in Education” and “Olympiads in Informatics”
- Expert of EU Eurostars Programme
- Representative of Lithuania in Education Committee TC3 under the International Federation for Information Processing (IFIP)
- Vice chair of the Technical Committee of IFIP for Education (TC3)
- Member of Steering Committee of International Olympiads in Informatics

Doc. E. Kurilovas

- Member of Steering Committee of European Schoolnet (or EUN, the network of 31 European Ministries of Education)
- Member of Lithuanian national CEDEFOP and ReferNet Committees
- Expert-evaluator: PHARE, Leonardo da Vinci, eContent*plus* programmes, European Regional Development Fund

Dr. T. Jevsikova

- International Federation for Information Processing (IFIP) TC3 WG 3.1 (Informatics for Secondary Education) member.
- Program committee member of the 4th International Conference on Learning and Teaching in Computing and Engineering (LaTiCe 2014) (http://ctl.utm.my/latice_rceerhed2014/?page_id=237).
- Organising committee member of 5th International doctoral school on informatics education and educational software engineering research. Druskininkai, November 26–30, 2014.
- Program Chair of international conference ITiCSE 2015 (the 20th Annual Conference on Innovation and Technology in Computer Science Education) (<http://www.iticse2015.mii.vu.lt/en/menu1/committee/>).
- Organising committee member of IFIP working joint conference „A New Culture of Learning: Computing and Next Generations“ (<http://www.ifip2015.mii.vu.lt/committee-3>).

DEPARTMENT OF NUMERICAL ANALYSIS

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Head – Prof. Dr. (HP) Artūras Štikonas

Principal researchers: Prof. Dr. Habil. Mifodijus Sapagovas; Prof. Dr. Stasys Rutkauskas;
Doc. Dr. Artūras Štikonas.

Senior researchers: Doc. Dr. Olga Štikonienė.

Researchers: Dr. Svetlana Roman.

Affairs manager: Kristina Skučaitė-Bingelė.

Research fellows: Gailė Paukštaitė, Martynas Burbuliavičius

Doctoral students:

Mathematics: Aidas Balčiūnas; Agnė Skučaitė; Kristina Skučaitė-Bingelė

Informatics: Liana Stonkienė

RESEARCH INTERESTS

Differential equations and applications. Investigation of the spectrum and boundary value problems for differential and difference operators with nonlocal conditions.

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

The investigation of spectrum and boundary problems of differential and difference operators with non-local conditions (2011–2016), A. Štikonas:

- * Examine the stability of alternating direction method for pseudoparabolic equation with nonlocal conditions.
- * Investigate the impact of coefficients of differential and difference operators with nonlocal conditions to the structure of the spectrum.
- * Investigate the domain of stability of pseudoparabolic schemes.
- * Investigate well-posedness of weakly coupled Dirichle type degenerate elliptic system when coupling matrix does not have simple structure.

MAIN SCIENTIFIC ACHIEVEMENTS IN 2014

- Generalized classical Peaceman-Rachford Alternating Direction Method for pseudoparabolic equation with integral conditions and proved the stability of this method (M. Sapagovas, A. Štikonas, O. Štikonienė).
- Examined the stability of weighted finite difference scheme for hyperbolic equation (A. Štikonas).

- Examined Dirichle type problem for weakly coupled elliptic system that degenerates on a line intersecting the domain. Obtained sufficient conditions for the existance and uniqueness of the solution in the class of Holder functions (S. Rutkauskas).
1. **O. Štikonienė, M. Sapagovas, R. Čiupaila.** On iterative methods for some elliptic equations with nonlocal conditions. *Nonlinear Anal. Model. Control.* 2014, **19**(3):517–535.
 2. J. Novickij, **A. Štikonas.** On the stability of a weighted finite difference scheme for wave equation with nonlocal boundary conditions. *Nonlinear Anal. Model. Control,* 2014, **19**(3):460–475.
 3. **S. Rutkauskas.** Dirichlet type problem for the system of elliptic equations, which order degenerate at a line. *Nonlinear Anal. Model. Control,* 2014, **19**(3):476–487.

National Research Projects

Council of Lithuania

Investigation of stationary problems with nonlocal conditions, numerical analysis and applications (No. MIP-047/2014). A. Štikonas 2014–2016.

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

Belarus State University (Minsk, Belarus)

OTHER SCIENTIFIC ACTIVITIES

A. Štikonas

- *Deputy-Editor-in-Chief* of the journal “*Nonlinear Analysis: Modelling and Control*“.
- Editorial board member of the journal “*Mathematical Modelling and Analysis*“.
- Editorial board member of the “*Lithuanian Mathematical Journal*“;

M. Sapagovas :

- Editorial board member of journal “*Lithuanian mathematical journal*”;
- Editorial board member of journal “*Nonlinear Analysis: Modelling and Control*“.

O. Štikonienė :

- Managing Editor of the journal “*Lithuanian mathematical journal*”.

S. Rutkauskas :

- Editorial board member of journal “*Lithuanian mathematical journal*”.
- Associate Editor of journal “*Lietuvos matematikos rinkinys. Proc. of the Lithuanian Mathematical Society, Ser. A*” and Ser. B.
- Editorial board member of journal “*Mathematical Modelling and Analysis*“.

DEPARTMENT OF PROBABILITY THEORY AND STATISTICS

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STAFF

Chief research fellows: Prof. Dr. Habil. K. Kubilius, Prof. Dr. Habil. E. Manstavičius, Prof. Dr. Habil. V. Paulauskas, Prof. Dr. Habil. J. K. Sunkloda.

Affiliated chief research fellow: Prof. Dr. J. J. Mačys.

Senior research fellows: Prof. Dr. O. Januškevičienė, Prof. Dr. S. Norvidas, Prof. Dr. M. Radavičius, Prof. Dr. Habil. R. Rudzkiš.

Research fellow: A. Bakšajėvas, D. Dzindzalieta, V. Kurauskas, A. Čiginas.

Technicians: L. Rybnikova, P. Šarka, R. Šimėnas

Doctoral students: V. Butkus, L. Dreiziėnė, Š. Germanas, M. Lapėnaitė-Gedvilė, T. Rudys.

RESEARCH INTERESTS

Applied probability theory, statistical hypothesis testing, econometrics

Probability theory, random matrix theory, combinatorics, discrete mathematics

Exponential dispersion models

Finite population statistics and statistical analysis of data

Extremal Problems in Harmonic Analysis

Statistics of random process

Random graphs

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Asymptotic Analysis of Linear and Nonlinear Statistics. Prof. K. Kubilius 2013–2015.

The upper bounds of the L_p norms of the normal approximation for random sums of independent identically distributed random variables, where the number of summands is a binomial random variable, are obtained. The methods of construction and simulation of the multivariate distributions of Tweedie are considered. A measure of dependence for symmetric α -stable random vectors was considered. Strongly consistent and asymptotically normal estimators of the Hurst parameter and volatility of the nonlinear stochastic differential equation driven by fBm were obtained. Some goodness-of-fit tests based on the maximum of smooth empirical processes was considered. Nonparametric estimates of large number of rare events distribution was proposed. An asymptotic properties of distribution of finite population statistics were considered. The dependencies of individual sectorial stock price indices of OMX Baltic security market on macroeconomic indicators using econometric methods was examined. Positive definite distributions criterion in terms of analytic functions was obtained. The asymptotic

distributions of the sequences of integer-valued additive functions defined on the symmetric group endowed with the Ewens probability measure as the order of the group increases were explored. It was proven that the a -points of the Selberg zeta-function are distributed uniformly modulo one.

Main publications:

1. **Andrius Čiginas**, On the asymptotic normality of finite population L-statistics // Statistical papers, 2014, vol. 55, no 4, p. 1047-1058
2. Colin McDiarmid, **Valentas Kurauskas**, Random graphs containing few disjoint excluded minors // Random structures and algorithms, 2014, vol. 44, no 2, p. 240-268.

National Research Projects

Project: **Robust Estimation in Finite Populations**. Prof. Dr. M. Radavičius, Dr. A. Čiginas 2013-2015.

The research is supported by the European Union Structural Funds project *Postdoctoral Fellowship Implementation in Lithuania* within the framework of the Measure for Enhancing Mobility of Scholars and Other Researchers and the Promotion of Student Research (VP1-3.1-ŠMM-01) of the Program of Human Resources Development Action Plan.

Research Council of Lithuania. **Existence of solutions of stochastic differential equations and estimation of parameters** (No. MIP-048/2014). Prof. Dr. Habil. K. Kubilius 2014-2016.

Research Council of Lithuania. **Statistical inferences for models with fractional Brownian motion and small values of the Hurst index** (No. VIZ-TYR-110). Prof. Dr. Habil. K. Kubilius, Prof. Dr. Y. Mishura 2014-11-24 – 2014-12-04.

Main publications:

1. **K. Kubilius**, V. Skorniakov, Estimation of parameters of a SDE driven by fractional Brownian motion with polynomial drift. Preprint.
2. **K. Kubilius**, Y. Mishura, K. Ralchenko, and O. Seleznev, Consistency of the drift parameter estimator for the discretized Ornstein-Uhlenbeck equation involving fractional Brownian motion with Hurst index $H \in (0, 1/2)$. Preprint.

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

Nurodomi pagrindiniai padalinio 2014 m. mokslinės ir inovacinės veiklos partneriai Lietuvoje ir užsienyje (ne daugiau 5).

Bielefeld University Collaborative Research Centre (Germany).

Taras Shevchenko National University of Kyiv (Ukraine).

OTHER SCIENTIFIC ACTIVITIES

Prof. K. Kubilius :

- co-editor-in-chief of the *Modern Stochastics: Theory and Applications*, <https://www.i-journals.org/vtxpp/VMSTA/> ;

- editorial board member of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard>;
- editorial board member of the *Mathematical Modelling and Analysis*,
<http://inga.vgtu.lt/~art/>;
- member of the organizing committee of international conference *11th International Vilnius Conference on Probability Theory and Mathematical Statistics*,
<http://www.vilniusconference2014.mif.vu.lt/organisation/>;
- member of Programme committee of international conference *Probability, Reliability and Stochastic Optimization*, <http://probability.univ.kiev.ua/prestoconf/>;
- board member of the Lithuanian Mathematical Society,
http://www.mif.vu.lt/lmd/index_en.html.

Prof. E. Manstavičius :

- section editor of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard>;
- editorial board member of the *International Journal of Number Theory*,
<http://www.worldscientific.com/page/ijnt/editorial-board>;
- editorial board member of the *ISRN Combinatorics*,
<http://www.isrn.com/journals/combinatorics/editors/>;
- member of the organizing committee of international conference *11th International Vilnius Conference on Probability Theory and Mathematical Statistics*,
<http://www.vilniusconference2014.mif.vu.lt/organisation/>;
- chairman of the Organizing Committee of the LIX Conference of Lithuanian Mathematical Society;
- chairman of the Board of the Lithuanian Mathematical Society;
- member of the Lithuanian Academy of Sciences,
http://lma.lt/index.php?option=com_k2&view=item&layout=item&id=366&Itemid=230&lang=en .

Prof. S. Norvidas :

- editorial board member of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard> .

Prof. V. Paulauskas :

- member of the Lithuanian Academy of Science
http://lma.lt/index.php?option=com_k2&view=item&layout=item&id=366&Itemid=230&lang=en ;
- editor-in-Chief of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard> ;
- member of the American Mathematical Society, <http://www.ams.org/home/> ;
- board member of the Lithuanian Mathematical Society,
http://www.mif.vu.lt/lmd/index_en.html;
- member of the International Statistical Institute, <http://isi.cbs.nl>;
- board member of the Lithuanian Statistical Society,
http://www.statistikusajunga.lt/index.php?option=com_content&task=view&id=5&Itemid=7 .

Doc. M. Radavičius :

- editorial board member of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard> ;
- editorial board member of the *Modern Stochastics: Theory and Applications*,
<https://www.i-journals.org/vtxpp/VMSTA/> .

Prof. R. Rudzkis :

- editorial board member of the *Lithuanian Mathematical Journal*,
<http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard> ;
- editorial board member of the journal *Прикладная эконометрика*,
<http://www.applieconometrics.ru/r/board/> ;
- editorial board member of the journal *Lietuvos statistikos darbai (Statistics Journal)*;
- editorial board member of the journal *Pinigų studijos (Monetary Studies)*,
http://www.lb.lt/pinigu_studijos_redkolegija .

DEPARTMENT OF RECOGNITION PROCESSES

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Head – Prof. Dr. (HP) *Julius Žilinskas*

STAFF

Principal researchers: Prof. Dr. (HP) Julius Žilinskas, Prof. Dr. Habil. Kazys Kazlauskas, Prof. Dr. (HP) Birutė Jasiūnaitė, Dr. Vytautas Kardelis

Senior researchers: Prof. Dr. Habil. Adolfas Laimutis Telksnys, Assoc. Prof. Dr. Rimantas Pupeikis, Assoc. Prof. Dr. Regina Kliukienė, Dr. Pijus Kasparaitis

Researchers: Dr. Algirdas Lančinskas, Dr. Gražina Korvel, Dr. Gintautas Tamulevičius, Dr. Margarita Beniušė, Dr. Remigijus Paulavičius, Dr. Vilma Zubaitienė, Jogilė Teresa Ramonaitė

Junior researchers: Nerijus Galiauskas

Specialists, engineering and expert staff: Linas Makutėnas, Evaldas Švageris, Evaldas Robertas Ožeraitis, Gediminas Navickas, Jonas Kaukėnas, Dr. Audrius Valotka, Ugnė Civilkaitė, Deimantė Krikštaponytė, Tomas Tarabilda, Dr. Mark Filipovič, Dr. Sigita Laurinčiukaitė, Dr. Gintaras Skersys, Dr. Irena Smetonienė, Tomas Anbinderis, Živilė Ringelienė, Laimonas Vėbra, Denis Lebedenko, Mindaugas Greibus, Giedrė Stapčinskienė

Affairs manager: Joana Katina

Doctoral students: Agnė Dzidolikaitė, Deividas Eringis, Tatjana Liogienė, Gytis Vaicekauskas, Giedrius Graževičius, Robertas Smaliukas, Tatjana Tišina, Eglė Zikarienė

RESEARCH INTERESTS

Random processes analysis and recognition.

Optimization and high-performance computing.

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Project title: Analysis, recognition, optimization, and control of non-linear systems and signals with complex structure Prof. Dr. (HP) J. Žilinskas

Description: Optimization algorithms for speech models, engineering structures, location and other problems. Analysis of the information protection methods and cryptanalysis strength enhancement. Identification and management methods algorithms of self-regulation of nonlinear systems, consisting of a linear block and a static nonlinearity combinations, analysis by the way of computer simulation.

Main results:

1. An algorithm for key-dependent S-box generation in the symmetric cipher system;
2. Proposed and investigated optimization algorithms;
3. Ritmoskopas E system effectiveness was evaluated in heart rate during a trial run. The experiment was carried out in Utena district dispensaries with 90 patients and 100 rowing athletes and battles. The results was used for practical medical purpose.

4. The fast Fourier transform procedure is modified in order to calculate the spectrum values in real time applications, when an old observation in a fixed period is changed by a new one;
5. Isolated word recognition rate dependance on analysis window length and frame shift was analysed. Recommendations for analysis parametre setup were formulated.

Publications:

- Kazlauskas, K., Pupeikis, R. (2014) A Simple Algorithm for Key-Dependent S-box Generation in the Block Cipher System *Informatika* (įteikta) ISSN 0868-4952
- Paulavičius, R., Sergeev, Y.D., Kvasov, D.E., Žilinskas, J. (2014) Globally-biased DISIMPL algorithm for expensive global optimization *Journal of Global Optimization* Vol. 59, No. 2-3, p. 545 – 567 ISSN 0925-5001
- Telksnys, L., Kaukėnas, J. (2014) Detection of Extrasystoles in Heart Rate Sequences Based on Short-term Specific Random Elements in Random Sequences Recognition Theory *Informatika* (įteikta) ISSN 0868-4952
- Pupeikis, R., (2014) Revised Fast Fourier Transform. *Radio Electronics, Computer Science, Control* (įteikta) ISSN 1607-3274
- Eringis, D., Tamulevičius, G. (2014) Improving speech recognition rate through analysis parameters *Electrical, control and communication engineering*. Vol. 5, No. 1, p. 61-66. ISSN 2255-9140.

National Research Projects

1. Research Council of Lithuania. **Creation and development of algorithms for global optimization** (No. MIP-051/2014) Prof. Dr. (HP) J. Žilinskas. 2014-2016.

Description: The aim of the project is to create and develop global optimization algorithms. Statistical, heuristic, *and* deterministic algorithms, their hybrids and parallel versions are developed and investigated in this project. We will aim to investigate which algorithms on which problems perform better and propose recommendations for solution of practical optimization problems.

2. European Union Structural Funds project **European Union Structural Funds project "Postdoctoral Fellowship Implementation in Lithuania"** within the framework of the Measure for Enhancing Mobility of Scholars and Other Researchers and the Promotion of Student Research (VP1-3.1-ŠMM-01) of the Program of Human Resources Development Action Plan. Post doctoral researcher R. Paulavičius (No. 004/18/ MTDS-580000-400). Prof. Dr. (HP) J. Žilinskas. 2012-2014.

Publications:

- Paulavičius, R., Žilinskas, J. (2014) *Simplicial Global Optimization*. Springer, ISBN 978-1-4614-9092-0. doi:10.1007/978-1-4614-9093-7.
 - Paulavičius, R., Sergeev, Y.D., Kvasov, D.E., Žilinskas, J. (2014) Globally-biased DISIMPL algorithm for expensive global optimization *Journal of Global Optimization*, ISSN 0925-5001, 59(2-3), 545-567. doi: 10.1007/s10898-014-0180-4
 - Paulavičius, R., Žilinskas, J. (2014) Simplicial Lipschitz optimization without the Lipschitz constant *Journal of Global Optimization*, ISSN 0925-5001, 59(1), 23-40. doi:10.1007/s10898-013-0089-3
3. European Union Structural Funds project. **Services controlled by the Lithuanian Speech - The project LIEPA** (No. VP2-3.1-IVPK-12-K-01-001) Prof. Laimutis Telksnys. 2013-2015

Description: The project LIEPA is aimed at developing tools which would open the possibilities of working and communicating with computers and smart things using the Lithuanian speech which presents numerous specific problems due to its abundant polysemy of inflection.

The services developed will be conducive to fostering pupils' abilities to use speech technologies, will aid adults in various work by talking to computers in Lithuanian, will provide people with advice how to correctly pronounce words in Standard Lithuanian.

International Research Projects

1. COST action **Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks TD1207** Member of Managing Committee Prof. Dr. (HP) J. Žilinskas. 2013-2017, http://www.cost.eu/domains_actions/ict/Actions/TD1207?management

Description: Energy Production and Distribution (EP&D) is among the biggest challenges of our time, since energy is a scarce resource whose efficient production and fair distribution is associated with many technical, economical, political and ethical issues like environmental protection and people health. EP&D networks have rapidly increased their size and complexity, e.g. with the introduction and interconnection of markets within the EU. Thus, there is an increasing need of systems supporting the operational, regulatory and design decisions through a highly inter-disciplinary approach, where experts of all the concerned fields contribute to the definition of appropriate mathematical models. This is particularly challenging because these models require the simultaneous use of many different mathematical optimization tools and the verification by experts of the underlying engineering and financial issues.

2. COST action **Onetwork for Sustainable Ultrascale Computing (NESUS) IC1305** Member of Managing Committee Dr. A. Lančinskas. 2014-2018, http://www.cost.eu/COST_Actions/ict/Actions/IC1305

Description: Ultrascale systems are envisioned as large-scale complex systems joining parallel and distributed computing systems that will be two to three orders of magnitude larger than today's systems. The EU is already funding large scale computing systems research, but it is not coordinated across researchers, leading to duplications and inefficiencies. The goal of the NESUS Action is to establish an open European research network targeting sustainable solutions for ultrascale computing aiming at cross fertilization among HPC, large scale distributed systems, and big data management. The network will contribute to glue disparate researchers working across different areas and provide a meeting ground for researchers in these separate areas to exchange ideas, to identify synergies, and to pursue common activities in research topics such as sustainable software solutions (applications and system software stack), data management, energy efficiency, and resilience. Some of the most active research groups of the world in this area are members of this proposal. This Action will increase the value of these groups at the European-level by reducing duplication of efforts and providing a more holistic view to all researchers, it will promote the leadership of Europe, and it will increase their impact on science, economy, and society.

3. A European Commission Funded Project (Comenius MP) **Learning Mathematics through new Communication Factors** (No. 526315-LLP-2012-CY-COMENIUS-CMP) Assoc. Prof. Dr. R. Pupeikis. 2012-2014

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

1. Hospital Kauno klinikos of Lithuanian University of Health Sciences (Lithuania)
2. UAB “Algoritmu sistemas” (Lithuania)
3. UAB “Inogama” (Lithuania)
4. Universidad de Almería (Spain)
5. Università della Calabria (Italy)

OTHER SCIENTIFIC ACTIVITIES

Prof. Dr. (HP) J. Žilinskas :

- Member of editorial boards of international journals:
 - *Central European Journal of Computer Science* (Springer/Versita), <http://www.springer.com/computer/journal/13537?detailsPage=editorialBoard>
 - *Central European Journal of Engineering* (Springer/Versita), <http://www.springer.com/engineering/journal/13531?detailsPage=editorialBoard>
 - *Informatica* (IOSPress/VU), <http://www.mii.lt/informatica/editors.htm>
 - *Journal of Global Optimization* (Springer), <http://www.springer.com/business+%26+management/operations+research/journal/10898?detailsPage=editorialBoard>
 - *Mathematical Modelling and Analysis* (Taylor&Francis/VGTU), <http://www.tandfonline.com/action/journalInformation?show=editorialBoard&journalCode=tmma20>
 - *Optimization Letters* (Springer), <http://www.springer.com/mathematics/journal/11590?detailsPage=editorialBoard>
- Chair of managing board of Continuous Optimization Working Group of The Association of European Operational Research Societies (EURO), http://europt.iam.metu.edu.tr/h_contactyeni.html
- Member of board of Lithuanian Operational Research Society (member society of EURO and IFORS), head of working group Optimization Methods and Applications, <http://www.mii.lt/LitORS/>
- Member of European Network of Excellence on High Performance and Embedded Architecture and Compilation (HiPEAC), <http://www.hipeac.net>
- Organizer
 - Workshop „Applications of Parallel Computation in Industry and Engineering“ on Euro-Par 2014: 20th International European Conference on Parallel Processing, Porto, Portugal, August 25-29, 2014, <http://europar2014.dcc.fc.up.pt/>
 - Invited section „Nonconvex Multiobjective Optimization“ on IFORS2014: 20th Conference of the International Federation of Operational Research Societies, Barcelona, Spain, July 13-18, 2014, <http://ifors2014.upc.edu/home/ifors>
- Member of Program/Scientific Committees
 - EUROPT 2014: 12th EUROPT Workshop on Advances in Continuous Optimization, Perpignan, France July 10-12, 2014 www.euro-online.org
 - EURO Mini-conference on Optimization in the Natural Sciences, Aveiro, Portugal February 5-9, 2014 <http://www.euro-online.org>

Prof. Dr. Habil. A. L. Telksnys :

- Member of Council on Digitization of Lithuanian Cultural Heritage
- Board member of the Ministry of Culture of the Republic of Lithuania Archives
- Member of the IEEE Technical Committee on eHealth

- Member of the Working group WG 7.1 Modeling and Simulation of the International Federation of Information Processing (IFIP)
- Member of Lithuanian Academy of Sciences
- Member of Commission of the Seimas of the Republic of Lithuania on Lithuanian traditions and heritage actualization
- Editorial board member of the international journal *Informatica*, <http://www.mii.lt/Informatica/editors.htm>
- Editorial board member of the international journal *Information Technology and Control*, <http://www.itc.ktu.lt/index.php/ITC/about/editorialTeam>
- Editorial board member of the journal *Informacijos mokslai*, <http://www.leidykla.vu.lt/lt/mokslo-darbai/informacijos-mokslai/informacijos-mokslai-2011-55-tomas/redaktoriu-kolegija/>
- Editorial board member of the international journal *Tamkang Journal of Science and Engineering*, http://www2.tku.edu.tw/~tkjse/editorial_board-en.htm
- Award of INFOBALT most prominent academic partner
- Prepared the Concept of Lithuanian speech into Electronic Media Research Development in 2014-2020. LIEPA 2

Prof. Dr. Habil. K. Kazlauskas :

- member of Lithuanian Computer Society, <http://www.liks.lt>
- member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>
- Reviewer of international journals:
 - *IEEE Trans. On Signal Processing*
 - *IEEE Trans. On Circuits and Systems*
 - *Informatica*
 - *Information Technology and Control*

Assoc. Prof. Dr. R. Pupeikis :

- Reviewer for the international journals:
 - *Informatica*, <http://www.mii.lt/Informatica/>
 - *Information Technology and Control*
 - *Journal of Zhejiang University*
 - *Measurement*
 - *Signal Processing*
 - *Applied Mathematical Modelling*
- member of Lithuanian Computer Society, <http://www.liks.lt>;
- member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>;
- member of Lithuanian Scientific Society, <http://www.lms.lt/?q=en/members>.

Dr. G. Tamulevičius :

- reviewer for the international journal *Informatica*, <http://www.mii.lt/Informatica/>
- reviewer for the international journal *Baltic Journal of Modern Computing*, www.lu.lv/baltic-journal-of-modern-computing
- Member of IEEE Computer society and Signal processing society section

Dr. A. Lančinskas :

- Affiliate member of European Network of Excellence on High Performance and Embedded Architecture and Compilation (HiPEAC), <http://www.hipeac.net>.

- Member of management committee of COST action IC1305 Network for Sustainable Ultrascale Computing (NESUS).
- Reviewer of international journals:
 - *Journal of Global Optimization*
 - *Central European Journal of Computer Science*
 - *Central European Journal of Engineering*
 - *Informatica*
 - *Optimization Letters*
 - *Baltic Journal of Modern Computing*

Dr. R. Paulavičius :

- Affiliate member of European Network of Excellence on High Performance and Embedded Architecture and Compilation (HiPEAC), <http://www.hipeac.net>.
- Reviewer of international journals:
 - *Journal of Global Optimization*
 - *Optimization Letters*
 - *Information Technology and Control*
 - *Central European Journal of Computer Science*
 - *Communications in Nonlinear Science and Numerical Simulation*
 - *Informatica*

DEPARTMENT OF SOFTWARE ENGINEERING

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Head – Prof. Dr. *Saulius Gudas*

Head of Mathematical Logic Sector at Software Engineering Department – Assoc. Prof. Dr. Habil. *Regimantas Ričardas Pliuškevičius* (e-mail: Regimantas.Pluskevicius@mii.vu.lt)

STAFF

Chief research fellows: Prof. Dr. A. Čaplinskas, Prof. Dr. D. Dzemydienė (part-time), Prof. Dr. Saulius Gudas.

Senior research fellow: Assoc. Prof. Dr. A. Lupeikienė.

Research fellows: Dr. S. Maskeliūnas.

Assistant research fellow: L. Paliulionienė.

Programmer: J. Miliauskaitė.

Doctoral students: G. Gričius (till 30 September), M. Kurmis, J. Miliauskaitė (till 30 September), A. Miliauskas, S. Svanidzaitė (till 30 September), A. Valatavičius (from 1 October), E. Žulkas.

Sector of Mathematical Logic

Senior research fellow: Assoc. Prof. Dr. Habil. R. Pliuškevičius.

Research fellows: Dr. R. Alonderis, Assoc. Prof. Dr. J. Sakalauskaitė.

Doctoral students: A. P. Girčys (till 30 September).

Affiliated principal researcher: Prof. Dr. Habil. S. Jukna.

Affiliated senior researcher: Assoc. Prof. Dr. A. Pliuškevičienė.

RESEARCH INTERESTS

Information system engineering:

- Theoretical foundations
- Model driven development

Software engineering:

- Software service engineering
- Computer-aided software engineering

Knowledge-based systems

Sector of Mathematical Logic

Proof theory of non-classical logics

Automated deduction

Decision procedures

Boolean function complexity

Lower bounds

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Methods and technologies to specify, model, and develop services-oriented software

systems. Prof. Dr. A. Čaplinskas (leader), Prof. Dr. S. Gudas, Prof. Dr. D. Dzemydienė, Doc. Dr. A. Lupeikienė, Dr. S. Maskeliūnas, G. Gričius, M. Kurmis, J. Miliauskaitė, A. Miliauskas, L. Paliulionienė, S. Svanidzaitė. 2012-2014.

Main results obtained in 2014:

1. It was proposed how to integrate information software systems requirements that were specified on the basis of different stakeholders views and attitudes.
2. The methods that enable to adapt heterogeneous e-services for special user's needs were created. The service-oriented decision support system architecture was proposed which integrate knowledge base, reasoning rules, and situation recognition rules by using wireless technology solutions.

Publications:

Svanidzaitė, S. (2014). A Methodology for Capturing and Managing Non-Functional Requirements for Enterprise Service-Oriented Systems. *Baltic J. Modern Computing*, 2(3):117-131.

Kurmis, M., Dzemydiene, D., Andziulis, A., Voznak, M., Jakovlev, S., Lukosius, Z., Gričius, G. (2014). Prediction Based Context Data Dissemination and Storage Model for Cooperative Vehicular Networks. In: Zeling, I., Suganthan, P.N., Chen, G., Snasel, V., Abraham, A., Roessler, O. (eds.). *Computational Intelligence and Complexity, Nostradamus 2014: Prediction, Modeling and Analysis of Complex Systems*, Springer International Publishing Switzerland, 289:21-30.

Gričius, G.; Drungilas, D.; Andziulis, A.; Dzemydienė, D.; Voznak, M. (2014). SOM based multi-agent hydro meteorological data collection system. In: Zeling, I., Suganthan, P.N., Chen, G., Snasel, V., Abraham, A., Roessler, O. (eds.). *Computational Intelligence and Complexity, Nostradamus 2014: Prediction, Modeling and Analysis of Complex Systems*, Springer International Publishing Switzerland, 289:31-41.

Construction of deductive systems for non-classical logics; evaluation of lower bounds for algorithmic paradigms.

Assoc. Prof. Dr. Habil. R. Pliuškevičius (leader), Dr. R. Alonderis, Dr. Habil. S. Jukna, Assoc. Prof. Dr. J. Sakalauskaitė, A. P. Girčys. 2012-2014.

Main results obtained in 2014:

1. Two finite proof search procedures for temporal logic of knowledge were constructed: one with weak-induction rule and looping axioms, and one based on the marks method.
2. The descion procedure was constructed for logic of correlated knowledge.
3. It was proved that dynamic programming algorithms for optimization problems with homogeneous objective functions cannot be more effective than monotonic arithmetic schemes.

Publications:

S. Jukna (2014). Limitations of incremental dynamic programming, *Algorithmica*, 69(2), p. 461-492.

S. Jukna (2014). Lower bounds for tropical circuits and dynamic programs. Theory of Computing Systems 2014, doi: 10.1007/s00224-014-9574-4 [publikuota dar tik online].

H. Giedra, J. Sakalauskaitė, R. Alonderis (2014). Decidability of logic of correlated knowledge. Priimtas į žurnalą „Informatica“.

National Research Projects

European Social Fund Agency. **Theoretical and engineering aspects of e-service technology development and application in high-performance computing platforms** (No. VP1-3.1-ŠMM-08-K-01-010). Prof. Dr. A. Čaplinskas, Doc. Dr. A. Lupeikienė, J. Miliauskaitė, L. Paliulionienė. 2012-2015.

Main results obtained in 2014:

1. A view-based approach to derive the balanced service quality requirements from an initial set of stakeholders' needs was proposed using fuzzy logic concepts with quality categories.
2. A method for comparison of SLAs in service-oriented computing using rule-based knowledge representation and first-order logic-based derivation was created.

Publications:

Lupeikiene, A.; Caplinskas, A. (2014). Requirements Engineering for Service-Oriented Enterprise Systems: Quality Requirements Negotiation. In: Haav, H.-M.; Kalja, A.; Robal, T. (Eds.). Databases and Information Systems VIII. Frontiers in Artificial Intelligence and Applications. Amsterdam: IOS Press, 270:27-40.

Miliauskaite, J. (2014). The Membership Function Construction in View-based Framework. In: Haav, H.-M., Kalja, A., Robal, T. (Eds.). Proceedings of the 11th International Baltic Conference on Database and Information Systems [Baltic DB&IS 2014], 8-11 June, Tallinn, Estonia. Tallinn: Tallinn University of Technology Press, 125-132.

Paliulionienė, L. (2014). A Rule-Based Method for Comparison of SLAs in Service-Oriented Computing. In: V., Strahonja; N., Vrček; D., Plantak Vukovac; Ch., Barry; M., Lang; H., Linger; Ch., Schneider (eds.). Proceeding of the 23rd International Conference on Information Systems Development (ISD2014 Croatia), Information System Development: Transforming Organizations and Society through Information Systems. September 2-4, 2014, Varaždin, Croatia. ISBN: 978-953-6071-44-9. Varaždin: University of Zagreb, 194-201.

International Science Programmes and Projects

European joint programme Eurostars programme project **Production effectiveness navigator** (No. E!6232 PEN; agreement No. 31V-20/LSS-580000-360 to fund the project by Agency for Science, Innovation and Technology). Prof. Dr. A. Čaplinskas, Doc. Dr. A. Lupeikienė. 2011-2014.

Main results obtained in 2014:

The concept of an ensemble of collaborating algorithms was proposed for advanced planning and scheduling (APS) systems theory. The main idea suggested is that APS systems should be designed by combining the collaboration patterns, such as hierarchical, incremental, iterative, and implemented by an ensemble of collaborating algorithms.

Publications:

Lupeikienė, A.; Dzemyda, G.; Kiss, F.; Čaplinskas, A. (2014) Advanced Planning and Scheduling Systems: Modelling and Implementation Challenges. *Informatica*, ISSN 0868-4952, Vol. 25, No. 4, 581-616.

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

University of Latvia (Latvia)
Tallinn University of Technology (Estonia)
University of Maribor (Slovenia)
University of Geneva (Switzerland)
University of Frankfurt (Germany)

OTHER SCIENTIFIC ACTIVITIES

Prof. Dr. S. Gudas

- editorial board member of the journal *Transformations in Business and Economy*, <http://www.transformations.khf.vu.lt/about/board>;
- editorial board member of the journal *Informacijos mokslai*, <http://www.vu.lt/leidyba/lt/mokslo-zurnalai/informacijos-mokslai/redakcine-kolegija>.
- program committee member of the 20th International Conference on Information and Software Technologies (ICIST 2014), Druskininkai, Lithuania, October 9-10, 2014, <http://icist.if.ktu.lt/index.php/ICIST/pages/view/Chairs&Commitee>;

Prof. Dr. A. Čaplinskas

- editorial board member of the journal *Informatica*, <http://www.mii.lt/informatica/editors.htm>;
- editorial board member of the *Baltic Journal of Modern Computing*, <http://www.bjmc.lu.lv/editorial-board/>
- editorial board member of the *Scientific Journal of Riga Technical University: Applied Computer Systems*, <https://ortus.rtu.lv/science/en/series/16>;
- steering committee member of the annual East European Conference on Advances in Databases and Information Systems (ADBIS), <http://adbis2014.finki.ukim.mk/index/steering-committee>;
- steering committee member of the International Baltic Conference on Databases and Information Systems (BalticDB&IS), <http://ati.ttu.ee/dbis2014/index.php?page=8>;
- program committee member of the 18th East European Conference on Advances in Databases and Information Systems (ADBIS), Ohrid, Republic of Macedonia, September 7-10, 2014, <http://adbis2014.finki.ukim.mk/index/program-committee>;
- program committee member of the Central and Eastern European Conference on Software Engineering Conference in Russia (CEE-SECR 2014), Moscow, Russia, October 22-25, 2014, <http://2014.secr.ru/lang/ru/about/program-committee>;
- program committee member of the 6th International Conference on Advanced Cognitive Technologies and Applications COGNITIVE 2014, Venice, Italy, May 25-29, 2014, <http://www.iaia.org/conferences2014/ComCOGNITIVE14.html>;

- program committee member of the 4th International Conference on Business Intelligence and Technology (BUSTECH 2014), Venice, Italy, May 25-29, 2014, <http://www.iaia.org/conferences2014/ComBUSTECH14.html>;
- program committee member of the 20th International Conference on Information and Software Technologies (ICIST 2014), Druskininkai, Lithuania, October 9-10, 2014, <http://icist.if.ktu.lt/index.php/ICIST/pages/view/Chairs&Commitee>;
- program committee member of the 15th International Conference on Computer Systems and Technologies CompSysTech'14, Ruse, Bulgaria, June 27-28, 2014, <http://www.compsystech.org/index.php?cmd=dPage&pid=pc>;
- program committee member of the IADIS International Conference on Intelligent Systems and Agents 2014, Lisbon, Portugal, July 15-17, 2014, <http://isa-conf.org/oldconferences/2014/committees>;
- program committee member of the 7th Workshop on Information Logistics and Knowledge Supply (ILOG 2014), Lund, Sweden, September 22-24, 2014, http://www.informatik.uni-rostock.de/lehrstuhl_fuer_wirtschaftsinformatik/win_research/konferenzenworkshops/ilog2014;
- program committee member of the 26th International Conference on Advanced Information Systems Engineering (CAiSE'14), Thessaloniki, Greece, June 16-20, 2014, <http://delab.csd.auth.gr/caise2014/committees/program.php>;
- program committee member of the 23rd International Conference on Information Systems Development (ISD 2014), Varaždin, Croatia, September 2-4, 2014, <http://isd2014.foi.hr/index.php#committees>;
- program committee member of the 7th IFIP WG 8.1 Working Conference on the Practice of Enterprise Modeling (PoEM 2014), Manchester, UK, November 12-13, 2014, <http://poem2014.org/programme-committee>;
- program committee member of the 11th International Baltic Conference on Databases and Information Systems (BalticDB&IS'2014), Tallinn, Estonia, June 8-11, 2014, <http://ati.ttu.ee/dbis2014/index.php?page=8>;
- program committee member of the 2nd International Pospelov Symposium on Hybrid and Synergetic Artificial Intelligence Systems (GISIS'2014), Svetlogorsk, Russia, June 30 – July 6, 2014, http://www.raai.org/news/arch_news/2014/01/GISIS-2014_1_inf_let.pdf;
- program committee member of 6th International Workshop on Data Analysis Methods for Software Systems (DatAMSS), Druskininkai, Lithuania, December 4-6, 2014, <http://www.mii.lt/datamss/index.php?page=organizers&lang=en>;
- Doctor honoris causa, University of Latvia, 2014.

Prof. Dr. D. Dzemydienė

- editorial board member of the *Scientific Journal of Riga Technical University: Applied Computer Systems*, <https://ortus.rtu.lv/science/en/series/16>;
- program committee member of the 11th International Baltic Conference on Databases and Information Systems (BalticDB&IS'2014), Tallinn, Estonia, June 8-11, 2014, <http://ati.ttu.ee/dbis2014/index.php?page=8>.

Doc. Dr. A. Lupeikienė

- editorial board member of the journal *Informatica*, <http://www.mii.lt/informatica/editors.htm>;
- editorial board member of the *Scientific Journal of Riga Technical University: Applied Computer Systems*, <https://ortus.rtu.lv/science/en/series/16>;
- steering committee member of the International Baltic Conference on Databases and Information Systems (BalticDB&IS), <http://ati.ttu.ee/dbis2014/index.php?page=8>;
- program committee member of the 11th International Baltic Conference on Databases and Information Systems (BalticDB&IS'2014), Tallinn, Estonia, June 8-11, 2014, <http://ati.ttu.ee/dbis2014/index.php?page=8>;
- program committee member of the 23rd International Conference on Information Systems Development (ISD 2014), Varaždin, Croatia, September 2-4, 2014, <http://isd2014.foi.hr/index.php#committees>.

Dr. S. Maskeliūnas

- program committee member of the 11th International Baltic Conference on Databases and Information Systems (BalticDB&IS'2014), Tallinn, Estonia, June 8-11, 2014, <http://ati.ttu.ee/dbis2014/index.php?page=8>;
- chairman of 6th International Workshop on Data Analysis Methods for Software Systems (DatAMSS), Druskininkai, Lithuania, December 4-6, 2014, <http://www.mii.lt/datamss/index.php?page=organizers&lang=en>;
- chairman of the Council of the Lithuanian Computer Society, <http://www.liks.lt/en/modules/tinycontent/index.php?id=3>.

Prof. Dr. Habil. S. Jukna

- scientific board member of ECCC, Electronic Colloquium on Computational Complexity, http://eccc.hpi-web.de/colloquium/scientific_board/;
- editorial board member of the *Lithuanian Mathematical Journal*, http://www.mii.lt/index.php?siteaction=pages.browse&page=lmj_an&lang=en.

Assoc. Prof. Dr. Habil. R. Pliuškevičius

- editorial board member of the *Lithuanian Mathematical Journal*, http://www.mii.lt/index.php?siteaction=pages.browse&page=lmj_an&lang=en;
- reviewer of *Mathematical Reviews* (USA), <http://www.ams.org/mr-database>;
- reviewer of *Computing Reviews* (USA), <http://www.computingreviews.com/>;
- member of American Mathematical Society.

DEPARTMENT OF STOCHASTIC PROCESSES

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Tel. (+370 5) 210 9317

E-mail: donatas.surgailis@mii.vu.lt

Head – Prof. Dr. Habil. Donatas Surgailis

STAFF

Principal researchers:

Prof. Dr. Liudas Giraitis (associated scientist)

Prof. Dr. Habil. Remigijus Leipus

Prof. Dr. Remigijus Mikulevičius (associated scientist)

Prof. Dr. Habil. Rimas Norvaiša

Prof. Dr. Habil. Alfredas Račkauskas

Prof. Dr. Habil. Artūras Dubickas

Senior researchers:

Dr. Arvydas Astrauskas

Prof. Dr. Habil. Bronius Grigelionis (passed away on 23 May 2014)

Dr. Martynas Manstavičius

Dr. Marijus Vaičiulis

Prof. Dr. Jonas Šiaulys

Researcher:

Dr. Remigijus Petras Gylys (retired since 14 August 2014)

Junior researcher:

Vaidotas Characiejus

Donata Puplinskaite

Albertas Zinevičius

Specialist:

Šarūnas Dirmeikis

Eglė Ignatavičiūtė

Julius Damarackas

Gintaras Valiukevičius

Affairs manager:

Jurgita Zinkevičienė

Doctoral student:

Ieva Grublytė

Vytautė Pilipauskaitė

Raimondas Malukas

Andrius Škarnulis

Šarūnas Dirmeikis

RESEARCH INTERESTS Statistical inference for long memory processes, modeling financial data, long range dependence, heavy tails, aggregation, random fields, self-similar processes, Levy processes, rough paths, concrete functional calculus, stochastic partial differential equations, random Hamiltonians, states on Girard algebras, insurance mathematics.

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Investigation of fractal properties of random processes and random fields. R. Norvaiša, D. Surgailis, 2012-2014.

Main results:

1. The existence and uniqueness in Hölder spaces of classical solutions of the Cauchy problem to parabolic integro-differential equations of the order $0 < \alpha < 2$ is investigated. The principal part of the operator is non differentiable and the obtained result is optimal.
2. The asymptotical formula for the number of reducible integer polynomials of degree d and of naive height at most T when $T \rightarrow \infty$ is derived, improving earlier results by van der Waerden, Pólya and Szegő, Dörge, Chela, and Kuba.

Main publications:

1. R. Mikulevičius, H. Pragarauskas. On the Cauchy problem for integro-differential operators in Hölder classes and the uniqueness of the martingale problem // *Potential Analysis* **40** (2014), 539-563.
2. A. Dubickas. On the number of reducible polynomials of bounded naive height // *Manuscripta Mathematica* **144** (2014), 439-456.

Projects supported by the Research Council of Lithuania:

Concrete functional calculus and probability theory: new methods and their applications

R. Norvaiša, 2012–2014.

Main results:

The central limit theorem for a weighted power variation of a fractal nonstationary Gaussian process is proved.

Publications

1. R. Malukas, R. Norvaiša. A central limit theorem for a weighted power variation of a Gaussian process // *Lithuanian Mathematical Journal*, **54** (2014), 323-344

Nonlinear long memory, heavy tails and aggregation (no. MIP-063/2013)

D. Surgailis, 2013–2015.

Main results:

We discuss joint temporal and contemporaneous aggregation of N independent copies of random-coefficient AR(1) process when N and time scale n increase at different rate. Assuming that the coefficient has a probability density, regularly varying at the unit root with exponent $-1 < \beta < 1$, different joint limits of normalized aggregated partial sums are shown to exist when $N^{1/(1+\beta)}/n$ tends to (i) ∞ , (ii) 0 , (iii) $0 < \mu < \infty$. The intermediate process arising under (iii) is studied in detail.

Main publications:

1. V. Pilipauskaitė, D. Surgailis. Joint temporal and contemporaneous aggregation of random-coefficient AR(1) processes // *Stochastic Processes and Their Applications*, **124** (2014), 1011-1035.
2. A. Philippe; D. Puplinskaitė; D. Surgailis. Contemporaneous aggregation of triangular array or random-coefficient AR(1) processes // *Journal of Time Series Analysis*, **35** (2014), 16-39.

OTHER SCIENTIFIC ACTIVITIES

A. Dubickas:

Member of the editorial board of "Uniform Distribution Theory".
Member of the editorial board of "European Journal of Mathematics".
Member of the editorial board of the "Conference Papers in Mathematics".
Member of the editorial board of the "Lithuanian Mathematical Journal".
Member of the editorial board of "Šiauliai Mathematical Seminar".

B. Grigelionis:

Member of Editorial Boards of the *Lithuanian Mathematical Journal* and *Nonlinear Analysis: Modeling and Control*.

R. P. Gylys:

Reviewer for Mathematical Reviews.

R. Norvaiša:

Managing editor of the *Lithuanian Mathematical Journal*
Associate editor *North-Western European Journal of Mathematics*
11th International Vilnius conference on Probability Theory and Mathematical Statistics.
Plenary talk „Power variation and p-variation of sample paths of stochastic processes“
5th Workshop on Game-Theoretic Probability and Related Areas. Invited talk: talk „Power variation and p-variation of sample paths of stochastic processes“

R. Leipus:

Editorial board of "Lithuanian Mathematical Journal".
Editorial board of "Pinigų studijos (Monetary Studies)".

Chairman of Organizing Committee of the 11th International Vilnius Conference on Probability Theory and Mathematical Statistics, 30 June - 4 July, 2014, Vilnius, Lithuania.

D. Surgailis:

Associate editor of the Lithuanian Mathematical Journal.
Invited speaker of the conference "Workshop on Stochastic Processes",
Aarhus, Denmark, April 22-23, 2014
Visiting professor at Department of mathematics, SCergy University, France, October, 2014.

J. Šiaulys:

Member of the editorial board of "Lithuanian Mathematical Journal".
Member of the editorial board of "Modern Stochastics: Theory and Methods"
Reviewer for Mathematical Reviews.
Reviewer for Zentralblatt MATH.

DEPARTMENT OF SYSTEMS ANALYSIS

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Head – Prof. Dr. Habil. *Gintautas Dzemyda*

STAFF

Principal researchers: Prof. Dr. Habil. Gintautas Dzemyda, Prof. Dr. Habil. Jonas Mockus, Prof. Dr. Habil. Leonidas Sakalauskas, Prof. Dr. Habil. Antanas Žilinskas

Senior researchers: Assoc. Prof. Dr. Olga Kurasova, Assoc. Prof. Dr. Saulius Minkevičius, Dr. Virginijus Marcinkevičius, Dr. Daniele Ettore Otera, Dr. Vytautas Čyras, Dr. Tadas Meškauskas, Dr. Mantas Puida

Affiliated researchers: Prof. Dr. Habil. Algis Garliauskas, Prof. Dr. Algirdas Pakštas, Dr. Audris Mockus, Dr. Stasys Steišūnas

Researchers: Assoc. Prof. Dr. Igor Belov, Dr. Jolita Bernatavičienė, Dr. Juozas Gordevičius, Dr. Rasa Karbauskaitė, Dr. Viktor Medvedev, Dr. Povilas Treigys, Dr. Sigitas Dapkūnas, Dr. Kristina Lapin

Junior Researchers: Dr. Darius Baronas, Dr. Aleksandr Igumenov, Gediminas Bazilevičius, Nerijus Galiauskas, Gražina Gimbutienė, Tomas Grigalis, Vytautas Jančiauskas, Karolis Koncevičius, Mažvydas Mackevičius, Aurimas Rapečka, Pavel Stefanovič.

Postdoctoral researcher: Dr. Ernestas Filatovas, Dr. Audrius Voroneckas

Specialists and engineering staff: Vytautas Tiesis, Dr. Laura Ringienė, Dr. Gintautas Jakimauskas, Marius Girnis, Mikalojus Ramanauskas, Mykolas Jurgis Bilinskas, Snieguolė Meškauskienė, Laimutė Mikalauskiene, Martynas Sabaliauskas, Karolis Urbanavičius, Adelė Bučelienė, Povilas Gibas

Affairs manager: Joana Katina

Doctoral students: Edgaras Artemčiukas, Gediminas Bazilevičius, Mykolas Jurgis Bilinskas, Denisas Bykovas, Albertas Gimbutas, Gražina Gimbutienė, Vytautas Jakštys, Vytautas Jančiauskas, Rokas Jurevičius, Karolis Mikėnas, Kotryna Paulauskienė, Natalija Pozniak, Tomas Prancevičius, Rimantė Rybnikonė, Martynas Sabaliauskas, Giedrius Stabingis, Justas Stašionis, Dovilė Stumbrienė, Darius Tamašauskas, Jevgenij Tichonov, Jelena Zubova

RESEARCH INTERESTS

- Analysis of large data sets;
- Artificial neural networks;
- Creation and computational realization of complex simulation models in epidemiology, education, economics, and energy supply systems and of various other origin with uncertainty;
- Data mining;
- Development of decision support systems;
- Bioinformatics;
- Geometric group theory and geometric topology;

- Global optimization methods;
- Image analysis, feature detection, image reconstruction, medical image processing;
- Internet data mining;
- Local optimization methods;
- Medical data analysis and decision support;
- Multiple criteria decision support;
- Operations research;
- Optimal control applications;
- Parallel computing;
- Visualisation of multidimensional data;
- Web service development.
- Monte-Carlo method, Stochastic Programming, Queueing Theory, Operations Research

RESEARCH PROJECTS CARRIED OUT IN 2014

Projects Supported by University Budget

Project title: Optimal solutions in data mining tasks. Prof. Dr. Habil. G. Dzemyda. 2014–2016

Description: The volumes and diversity of data are rapidly increasing in our days. Optimization, visualization and simulation methods for specific data (biomedical, financial, visual etc.) help us to analyze and take decisions. However there is a need to get new knowledge from existing data. Therefore it is necessary to develop new hybrid data mining and optimization methods that can help you to find and reveal an important new knowledge. Parallel computing is also an important tool for these challenges.

Main results:

1. New genetic algorithm for solving vehicle routing problems has been developed and investigated;
2. New genetic algorithm for solving vehicle routing problems has been developed and investigated;
3. Efficient optimization algorithms are theoretically substantiated in the case of „expensive“, „black box“ objective functions;
4. Efficiency of the use of the geodesic distances in the intrinsic dimensionality estimation of the data using packing numbers is investigated.

Publications:

- Vaira, G., Kurasova, O. (2014) Genetic algorithm for VRP with constraints based on feasible insertion *Informatica* Vol. 25, No. 1, p. 505-521 ISSN 0868-4952
- Mockus, J., Katin, I., Katina, J. (2014) On the Optimization of Investment Strategies in the Context of Virtual Financial Market by the Individual Approach to Risk *Informatica* Vol. 25, No. 2, p. 241-264 ISSN 0868-4952
- Žilinskas A., Calvin, M.J. (2014) On a Global Optimization Algorithm for Bivariate Smooth Functions *Journal of Optimization Theory and Applications* Vol. 163, No. 2, p. 528-547 ISSN 0022-3239
- Žilinskas A. (2014) A statistical model-based algorithm for 'black-box' multi-objective optimisation *International Journal of Systems Science* Vol. 45, No. 1, p. 82-93 ISSN 0020-7721

- Karbauskaitė, R., Dzemyda, G. (2014) Geodesic distances in the intrinsic dimensionality estimation using packing numbers *Nonlinear analysis : Modelling and Control* Vol. 19, No. 4, p. 578-591 ISSN 1392-5113

Project title: Study and application of statistical simulation and stochastic programming to computer network design. Prof. Dr. Habil. L. Sakalauskas 2013–2015

Description: Big data are generated and stored in computer networks that are saving a lot of information which extraction and application is very important for gain of concurrent ability in modern dynamic environment of research and business. Problems of computer network analysis, modelling and control are usually solved by methods of data mining and queueing theory.

Main results:

- The stochastic algorithm for association rules discovery in large data sets, which has many applications in warehousing, has been developed. The algorithm gives conclusions about association rules using analysis of randomly selected subsequences. The developed algorithm was tested by computer modeling algorithm
- The issues of analysis of queueing systems, arising in the network theory and communications theory, called multiphase queueing systems, tandem queues or series of queueing systems, have been studied. The multiphase queueing systems can be useful for modelling practical multi-stage service systems in a variety of disciplines, especially on manufacturing (assembly lines), computer networking (packet switch structures), and in telecommunications (e.g. cellular mobile networks), etc. The research presented heavy traffic limit theorems for the cumulative idle time in multiphase queues. In this work, functional limit theorems are proved for the values of important probability characteristics of the queueing system (a cumulative idle time of a customer).

National Research Projects

1. Research Council of Lithuania. **Methods and algorithms of non-convex multi-objective optimization** (No. MIP-063/2012) Prof. Dr. Habil. A. Žilinskas. 2012-2014.

Description: New multi-objective optimization methods for non-convex objectives are proposed and their efficiency evaluated by means of solving test and practical problems.

Publications:

- A. Žilinskas (2014) A one-step worst-case optimal algorithm for bi-objective univariate optimization, *Optimization Letters*, vol.8, p.1945-1960. DOI 10.1007/s11590-013-0712-8
- J. Calvin, A. Žilinskas (2014) On a Global Optimization Algorithm for Bivariate Smooth Functions, *Journal of Optimization Theory and Applications*, vol.163, p.528-547.
- J. Žilinskas, B. Goldengorin, P.M. Pardalos (2014) Pareto-optimal front of cell formation problem in group technology. *Journal of Global Optimization*, ISSN 0925-5001, in press. doi:10.1007/s10898-014-0154-6

2. Research Council of Lithuania. **Groups of geometry and** (No. MIP-046/2014) Dr. D. Otera. 2014-2016.

Description: Asymptotic topology of manifolds and quasi-isometry invariants of discrete groups. Main topics: simple connectivity at infinity, geometric simple connectivity, quasi-simple filtration (QSF), Tucker property, and the easy inverse representations. The main goal is to show that all groups are easily representable.

3. Research Council of Lithuania. **Identification of epigenetic markers for early diagnosis of colorectal cancer** (No. MIP-043/2014) Dr. J. Gordevičius. 2014-2016.

Description: In this project we propose to perform data analysis of epigenetic profiles in blood circulating DNA to detect epigenetic biomarkers for early CRC diagnosis. Our goal is to apply novel algorithmic methods that will reveal epigenetic aberrations in extended regions when comparing cancer patients to controls. The detected regions will be used to train machine learning algorithms and to build and evaluate an early diagnostic CRC classifier. The bioinformatics analysis conducted in this project may provide novel, non-invasive markers, with the potential for translation into clinical practice.

4. Research Council of Lithuania. **European Union Structural Funds project "Postdoctoral Fellowship Implementation in Lithuania" within the framework of the Measure for Enhancing Mobility of Scholars and Other Researchers and the Promotion of Student Research (VP1-3.1-ŠMM-01) of the Program of Human Resources Development Action Plan. Post doctoral researcher J. Gordevičius** (No. 004/11/ MTDS-580000-401) Prof. Dr. Habil. G. Dzemyda. 2012-2014.

Description: Novel algorithmic methods are developed for analysis of human methylome datasets obtained from whole genome tiling arrays or next generation sequencing.

5. Research Council of Lithuania. **European Union Structural Funds project "Postdoctoral Fellowship Implementation in Lithuania" within the framework of the Measure for Enhancing Mobility of Scholars and Other Researchers and the Promotion of Student Research (VP1-3.1-ŠMM-01) of the Program of Human Resources Development Action Plan. Post doctoral researcher E. Filatovas** (No. 004/56/ MTS-580000-318) Prof. Dr. Habil. G. Dzemyda. 2013-2015.

Description: Creation of the new hybrid methods combining interactive methods and evolutionary multiobjective optimization algorithms. Development of the techniques for visualizing Pareto front when solving multiobjective optimization problems.

6. Research Council of Lithuania. **European Union Structural Funds project "Postdoctoral Fellowship Implementation in Lithuania" within the framework of the Measure for Enhancing Mobility of Scholars and Other Researchers and the Promotion of Student Research (VP1-3.1-ŠMM-01) of the Program of Human Resources Development Action Plan. Post doctoral researcher A. Varoneckas** (No. 004/61/ MTS-580000-323) Prof. Dr. Habil. A. Žilinskas. 2013-2015.

7. European social fund agency **Theoretical and Engineering Aspects of e-Service Technology Development and Application in High-performance Computing Platforms** (No. VP1-3.1-ŠMM-08-K-01-010). Prof. Dr. Habil. G. Dzemyda. 2012-2015.

Publications:

- Kurasova, O., Marcinkevičius, V., Medvedev, V., Rapečka, A., Stefanovič, P. (2014) Data mining in big data era: methods and technologies *Data analysis methods for software systems : 6th International Workshop : [abstracts book]* p. 33 ISBN 9789986680505
- Stefanovič, P., Kurasova, O. (2014) Creation of text document matrices and visualization by self-organizing map *Information Technology and Control* Vol. 43, No. 1, p. 37-46 ISSN 1392-124X

- Kurasova, O., Marcinkevičius, V., Medvedev, V., Rapečka, A., Stefanovič, P. (2014) Strategies for big data clustering *ICTAI 2014: 2014 IEEE 26th international conference on tools with artificial intelligence: proceedings* p. 740-747 ISSN 1082-3409
- 8. Research according Innovation voucher. **A model for new book demand prediction for short time** (No. MTS-580000-2707) (Joint-stock company UAB „Barzda“, Agency for Science, Innovation and Technology (MITA)). Dr. V. Marcinkevičius 2014-11-25 – 2015-02-27.
- 9. Research according Innovation voucher. **An investigation of genetic risk factors assertion methods** (No. MTS-580000-x) (Joint-stock company „Algoritmu sistemas“, Agency for Science, Innovation and Technology (MITA)). Dr. V. Marcinkevičius. 2014-11-31 – 2015-04-20.
- 10. Project of EU Structural funds economic growth action program’s priority “Information Society for All” implementation tool “Lithuanian language in the information society” **Creation of the website providing integral resources, products and services of the Lithuanian language and its writing** (No. VP2-3.1-IVPK-12-K-01-003). Dr. V. Marcinkevičius. 2012-2015.

Description: In the project there will be developed the information system designated to store resources of Lithuanian language and to provide these resources to users through web browsers, web services and mobile applications.

International Research Projects

1. COST action **Big Data Era in Sky and Earth Observation TD1403** Member of Managing Committee Assoc. Prof. Dr. Olga Kurasova. 2014-2018, http://www.cost.eu/COST_Actions/TDP/Actions/TD1403
2. “Eurostars” joint programme project **Production effectiveness navigator** (No. E!6232 PEN implementation. No. 31V-5/LSS-580000-741), (“Eurostars” programme). Prof. Dr. Habil. G. Dzemyda. 2011-2014.

Description: The requirement report and reference model of the PEN system have been corrected. Some heuristic rescheduling algorithms have been developed according to event driven views. They will be implemented in PEN prototype and will be used in order to identify, estimate and optimize the consequences of planned changes related to the products, resources and process. Deterministic algorithms, which could be implemented in the PEN system, are also reviewed.

Publications:

- Bernatavičienė, J., Kurasova, O., Marcinkevičius, V., Medvedev, V., Podgorni, P., Treigys, P. (2014) Deterministic methods for a production effectiveness navigator *Baltic journal of modern computing*. Riga: University of Latvia. Vol. 2, no. 1, p. 1-15 ISSN 2255-8942 Prieiga per internetą: http://www.bjmc.lu.lv/fileadmin/user_upload/lu_portal/projekti/bjmc/Contents/2_1_1_Bernataviciene.pdf
- Tiešis, V., Dzemyda, G., Kizil, T. (2014) Heuristic reactive rescheduling algorithms in the advanced scheduling Add-on for ERP *Baltic journal of modern computing* Riga: University of Latvia. Vol. 2, no. 4, p. 272-284 ISSN 2255-8942 Prieiga per internetą:

http://www.bjmc.lu.lv/fileadmin/user_upload/lu_portal/projekti/bjmc/Contents/2_4_6_Tesis1.pdf

MAIN R&D&I (RESEARCH, DEVELOPMENT AND INOVATION) PARTNERS

1. University College London, UK
2. Poznan Supercomputing and Networking Center, Poland
3. Middle East Technical University, Ankara, Turkey
4. Vilniaus Universiteto Onkologijos institutas
5. Hospital of Lithuanian University of Health Sciences Kauno klinikos
6. Optomed Oy (Ltd)
7. Sapienza University, Rome, Italy, Prof Carlo Melloni

OTHER SCIENTIFIC ACTIVITIES

Prof. Dr. Habil. G. Dzemyda :

- Member of programme committees of the following International conferences:
 - International Conference on Operations Research and Enterprise Systems (ICORES 2014), <http://www.icores.org/>
 - International conference on Psychological Computing Systems (PhyCS 2014), www.phyics.org .
- Chairman of the 6th International Workshop „Data Analysis Methods for Software Systems“, Druskininkai, Lithuania, December 4-6, 2014, <http://www.mii.lt/DatAMSS/>
- Co-Editor-in-Chief of *Baltic Journal of Modern Computing* <http://www.lu.lv/baltic-journal-of-modern-computing/>
- Editorial board member of the International Journal *Informatica* (IOSPress/VU), executive Editor, <http://www.mii.lt/Informatica/editors.htm>
- Editorial board member of Eastern and Central Europe Journal *Informatics in Education*, http://www.mii.lt/informatics_in_education/editors.htm
- Editorial board member of the *Journal of Civil Engineering and Management*, http://www.jcem.vgtu.lt/en/?page=2&sub=RED_KOLEGIJA
- Editorial board member of the *Nonlinear Analysis; Modelling and Control*, deputy-editor-in-chief, <http://www.mii.lt/NA/>
- International editorial board member of the *Vestnik BSU. Series 1. Physics. Mathematics. Informatics* <http://www.bsu.by/en/main.aspx?guid=208151>
- Editorial board member of the journal *Mokslas ir technika*, <http://www.mokslasirtechnika.lt/>
- Member of the Lithuanian Academy of Sciences http://lma.lt/index.php?option=com_k2&view=item&layout=item&id=235&Itemid=243&lang=lt
- Member of IFIP Technical Committee 12 Artificial Intelligence, <http://www.ifiptc12.org.uk/ifiptc12/members.php>
- Board member of Transportation Science and Information Technologies in Ministry of Transport and Communications of the Republic of Lithuania
- Board member of Military Science and Technologies in Ministry of National Defence of the Republic of Lithuania
- Member of Lithuanian Academy of Science, <http://lma.lt>
- Member of Lithuanian Computer Society, <http://www.liks.lt/>
- Member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>

- Member of Lithuanian Operational Research Society, <http://www.mii.lt/LitORS/>
- Leader of the projects in Vilnius University:
 - NKP – Project of the National Integrated Program of Information Technologies “Theoretical and Engineering Aspects of e-Service Technology Development and Application in High-performance Computing Platforms” (No. VP1-3.1-ŠMM-08-K-01-010),
 - MIDAS – National Open Access Research Data Archive (NO. VP2-3.1-IVPK-13-V-01-001),
 - PEN – „Eurostars” joint programme project “Production effectiveness navigator” (No. E!6232 PEN implementation. No. 31V-5/LSS-580000-741), („Eurostars” programme)

Prof. Dr. Habil. L. Sakalauskas :

- Editorial board member of Journal *Technological and Economic Development of Economy* <http://www.tandf.co.uk/journals/journal.asp?issn=2029-4913&linktype=145>
- Elected member of International Statistical Institute (2001) <http://isi-web.org/>
- Member of Managerial Board of EURO Working Group on Stochastic Programming, www.mii.lt/EWGSP
- Member of European Working Group on Continuous Optimization <http://www.iam.metu.edu.tr/EUROPT/>
- President of Lithuanian Operational Research Society, <http://www.mii.lt/LitORS/>
- Chairman of the 6th Lithuanian OR Conference for young scientists, September 22, 2014, Vilnius, Lithuania, <http://www.mii.lt/OT-2014>

Prof. Dr. Habil. A. Žilinskas :

- Member of IFIP working group WG 7.6 Optimization-Based Computer Aided Modeling and Design, <http://www.ifip.org/bulletin/bulltcs/memtc07.htm>
- Member of American Mathematical Society <http://www.ams.org/cml>
- Member of programme committees of the following International conferences:
 - CompSysTech 2014, Ruse, Bulgaria, 2014.06.27-28
 - International Conference of Numerical Analysis and Applied Mathematics, Rhodes, Greece, 2014.09.22-28
 - 7th Workshop on Computational Optimization, Warsaw, Poland, 2014 September 7-10.
- Member of editorial boards of international journals:
 - *Journal of Global Optimization* (Springer), <http://www.springer.com/business+%26+management/operations+research/journal/10898?detailsPage=editorialBoard>
 - *Control and Cybernetics*, <http://control.ibspan.waw.pl:3000/mainpage/index>
 - *Informatica* (IOSPress/VU), <http://www.mii.lt/Informatica/editors.htm>
 - *Journal of Intelligent Learning Systems and Applications*, <http://www.scirp.org/journal/jilsa/>
 - *International Journal of Grid and High Performance Computing*, <http://www.igi-global.com/Bookstore/TitleDetails.aspx?TitleId=1105&DetailsType=ReviewBoard>
 - *The Open Cybernetics and Systemics Journal*, <http://www.bentham.org/open/tocsj/EBM.htm>
 - *Baltic Journal of Modern Computing* <http://www.bjmc.lu.lv/editorial-board/>
- Member of the Lithuanian Academy of Sciences, <http://lma.lt>
http://lma.lt/index.php?option=com_k2&view=item&layout=item&id=235&Itemid=243&lang=lt

- Board member of Constantin Caratheodory Prize 2015

Prof. Dr. Habil. J. Mockus :

- Member of the Lithuanian Academy of Sciences
http://lma.lt/index.php?option=com_k2&view=item&layout=item&id=235&Itemid=243&lang=lt
- Editor-in-chief of International Journal *Informatica* (IOSPress/VU),
<http://www.mii.lt/Informatica/editors.htm>
- Member of editorial board of International Journal *Journal of Global Optimization* (Springer),
<http://www.springer.com/business+%26+management/operations+research/journal/10898?detailsPage=editorialBoard>
- Member of editorial board of *The Scientific World Journal* (Hindawi),
<http://www.hindawi.com/journals/tswj/editors/operations.research/>
- Member of American Mathematical Society <http://www.ams.org/cml>
- Member of IFIP Technical Committee WG 7.7 Stochastic Optimization,
<http://www.ifip.org/bulletin/bulltcs/memtc07.htm>

Prof. Dr. Habil. A. Garliauskas :

- referee of international journals:
 - *Informatica* (IOSPress/VU)
 - *IEEE Transactions on Neural Networks*
- Member of Lithuanian Science Society Council, <http://www.lms.lt/>
- Chair person of Informatics Department of Lithuanian Science Society,
<http://lms.lt/?q=en/society/browse/22>
- Member of Intelligent Systems Research Laboratory at the College of Engineering,
<http://www.engr.usask.ca/>
- Member of Special Interest Group on Nonlinear Dynamics (SIG/NL),
<http://www.acm.org/sigs>
- Member of Neuroscience Special Interest Group (SIG), <http://www.inns.org/sig/>
- Member of ABI research advisory board, <http://www.abiworldwide.com/>

Assoc. Prof. Dr. I. Belovas :

- Reviewer of international journal *Mathematical Modelling and Analysis* (Taylor & Francis)
- Member of *Lithuanian Mathematical Society*, <http://www.mif.vu.lt/lmd/>

Assoc. Prof. Dr. O. Kurasova :

- Member of editorial boards of international journals:
 - *Nonlinear Analysis: Modelling and Control*, <http://www.mii.lt/NA/>
 - *Baltic Journal of Modern Computing*, <http://www.lu.lv/baltic-journal-of-modern-computing/editorial-board/>
 - *Computational Science and Techniques*
<http://journals.ku.lt/index.php/CST/about/editorialTeam>
- Member of Council of Lithuanian Computer Society,
<http://www.liks.lt/en/modules/tinycontent/index.php?id=3>
- Member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>
- Member of Lithuanian Operational Research Society, <http://www.mii.lt/LitORS/>
- reviewer of international journals:

- *Informatica* (IOSPress/VU)
- *Mathematical Modelling and Analysis* (Taylor & Francis)
- *Journal of Visualization* (Springer)
- *Mechanical Systems and Signal Processing* (Elsevier)
- *Informatics in Education* (VU)
- *Central European Journal of Computer Science* (Springer),
- *Neural Processing Letters* (Springer),
- *Optimization Letters* (Springer),
- *Information Technology and Control* (KTU),
- *Neurocomputing* (Elsevier)

Assoc. Prof. Dr. S. Minkevičius :

- Reviewer of international journal *Mathematical Modelling and Analysis* (Taylor & Francis)
- Member of *Lithuanian Mathematical Society*, <http://www.mif.vu.lt/lmd/>

Dr. J. Bernatavičienė :

- Managing Co-editor of *Baltic Journal of Modern Computing*, <http://www.bjmc.lu.lv/editorial-board/>
- Member of Lithuanian Computer Society (Artificial Intelligence Section), <http://www.liks.lt/>
- Member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>
- Member of Lithuanian Operational Research Society, <http://www.mii.lt/LitORS/>
- reviewer of international journals:
 - *Informatica* (IOSPress/VU)
 - *Baltic Journal of Modern Computing*

Dr. E. Filatovas :

- Member of Council of Lithuanian Computer Society, <http://www.liks.lt/en/modules/tinycontent/index.php?id=3>
- Reviewer of international journal *Baltic Journal of Modern Computing*
- INFOBALT scholarships to young scientists (2014)

Dr. R. Karbauskaitė :

- Managing editor of *Informatica* (IOSPress/VU) <http://www.mii.lt/informatica/instruct.htm>
- Reviewer of international journals:
 - *Informatica* (IOSPress/VU)
 - *Computer Vision and Image Understanding*

Dr. V. Marcinkevičius :

- Member of Council of Lithuanian Computer Society, <http://www.liks.lt/en/modules/tinycontent/index.php?id=3>
- Member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>
- Member of Lithuanian Operational Research Society, <http://www.mii.lt/LitORS/>
- Reviewer of international journal *Informatica* (IOSPress/VU)

Dr. V. Medvedev :

- Member of Council of Lithuanian Computer Society, <http://www.liks.lt/en/modules/tinycontent/index.php?id=3>
- Member of Lithuanian Mathematical Society, <http://www.mif.vu.lt/lmd/>
- Member SERVICE COMPUTATION 2014 Technical Program Committee, <http://www.iaria.org/conferences2014/ComSERVICECOMPUTATION14.html>
- reviewer of international journals:
 - *Informatica* (IOSPress/VU)
 - *Mathematical Modelling and Analysis* (Taylor & Francis)
 - *Journal of Global Optimization* (Springer)
 - *Pattern Recognition Letters* (Elsevier)
 - *The Baltic Journal of Road and Bridge Engineering* (Technika/VGTU, Lithuania)
 - *Baltic Journal of Modern Computing*

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