ITHEA International Scientific Society

ITA 2020
XXII-nd Joint International Scientific Events on Informatics
www.ithea.org

Summer Session: June 28 - July 01, 2020
Hotel "KORAL" in the resort “St. Constantine & St. Helena”, Varna, Bulgaria

Papers from ITA 2020 will be published by:
The ITHEA International Journal
"Information Theories and Applications" (IJ ITA)
The ITHEA International Journal
"Information Technologies and Knowledge" (IJ ITK)
The ITHEA International Journal
"Information Models and Analyses" (IJ IMA)
The ITHEA International Journal
"Information Content and Processing" (IJ ICP)
The ITHEA International Book Series
"Information Science and Computing” (IBS ISC)
The ITHEA International Digital Library with
Referative Scientific Index (RSI)

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ITA 2020 is organized by:

ITHEA International Scientific Society (ITHEA ISS)
Association of Developers and Users of Intelligent Systems (ADUIS)
Institute of Information Theories and Applications FOI ITHEA (Bulgaria)
University of Telecommunications and Post, Sofia (Bulgaria)

in tight collaboration with:

- Spanish Network on Biomolecular and Biocellular Computing (Spain)
- National Academy of Sciences of Ukraine
- FIS Foundations of Information Science (Spain)

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- School of Information Technologies and Cybersecurity of V.S. Martinovsky Institute of Refrigeration Cryotechnologies and Ecoenergetics at Odessa National Academy of Food Technologies, (Ukraine)
## ITA 2020 Conferences

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**Deadlines for ITA 2020**

For all summer session conferences:
- **January 31, 2020**: reservation of hotel, submission of registration forms and visa application forms by e-mail: office@ithea.org and office@hit-tourism.com
- **February 29, 2020**: submission of proposals for ISSI doctoral consortium by e-mail: office@ithea.org
- **March 31, 2020**: submission of paper by the ITHEA ISS Submission Web System: http://ita.ithea.org
  submission of proposals for ISSI workshops by e-mail: office@ithea.org
- **April 15, 2020**: notification of the paper acceptance by the ITHEA ISS Submission Web System
  notification of the workshop acceptance to authors e-mail

**Manuscripts**

ITHEA rules for preparing the manuscripts are compulsory. Responsibility for manuscripts published in ITHEA International Journals and Book Series belongs to authors. Please get permission to reprint any copyrighted material. Not acceptable manuscripts will be returned to authors with recommendations. After authors’ editing and refinement, if the manuscripts are reviewed positively, they will be published.

Manuscripts need to be formatted in DOC or TeX formats according the sample sheets given at:
- DOC template: http://www.ithea.org/conferences/ithea_doc_template.doc
- TeX template: http://www.ithea.org/conferences/ithea_tex_template.tex

Accepted manuscripts will be published by ITHEA® in the peer reviewed ITHEA International Journals:
- "Information Theories and Applications" (IJ ITA);
- "Information Technologies and Knowledge" (IJ ITK);
- “Information Models and Analyses” (IJ IMA);
- “Information Content and Processing” (IJ ICP).

Papers published by ITHEA as well as Abstracts in English of all works are freely available online at the ITHEA ISS International Digital Library and Indexing System: http://idr.ithea.org.

**Submission**

The camera-ready copy of the manuscript should be received by the ITHEA Conference Submission System (http://ita.ithea.org) or by the ITHEA Journal Submission System (http://ij.ithea.org); e-mail for questions: office@ithea.org.

**Please observe the rules and deadlines!**
Submit registration cards and visa forms to e-mail: office@ithea.org.

**VISAS for ITA 2020**

To receive Bulgarian visa for ITA 2020 Summer Session one has to have:
- Voucher from HIT-Tourism Tur Operator for hotel accommodation. Send your requests for hotel reservation to both e-mails: office@hit-tourism.com and office@ithea.org.
- Invitation letter from ITHEA. In order to obtain invitation letter, fill visa and registration forms and send them to office@ithea.org.
- Other documents that Bulgarian embassy in your country requires.

International passports must be valid at least six months after the conference time.
Fees (including 20% VAT)

Fees do not cover excursions and other social events.

**Registration Fee** is **EURO 360**.
Registration fee includes both publication fee and participation fee per one paper.

**Publication Fee** is **EURO 180** per paper.
Publication fee includes only one exemplar of the issue in which the paper has been published.

**Participation Fee** is **EURO 180** per paper.
Participation fee includes participation for one person and permits presentation of one paper without publishing and access to conference events including summer school and ITHEA Evening.

**Participation Fee for Doctoral Consortium** is **EURO 180** per presented PhD.
Participation fee for Doctoral Consortium includes participation for one PhD student and permits presentation of one PhD with afterward publishing and access to all conference events and ITHEA Evening.

**Participation Fee for International Summer School on Informatics** is **EURO 90** per student.
Participation fee for Internation Summer School on Informatics includes participation for one student with access to all conference events and ITHEA Evening.

**Accompanying Persons’ Fee** is **EURO 30**
Accompanying persons’ fee covers the organizing expenses and one ITHEA Evening.

**Additional exemplars**
One additional journal number costs **EURO 24**.
One additional book costs **EURO 48**.

**Post expenses:**
Please, note that the fees do not include post expenses.
Post expenses depend of destination but are not less than **EUR 24**.

**Contact for ITA 2019:** [office@ithea.org](mailto:office@ithea.org)

**ITA 2020 is supported by:**

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- Srtukto Ltd.
- LUXIT optical boutiques
Accommodation for ITA 2020 Summer Session

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ITA 2020 HOTELS WITH SPECIAL DISCOUNTS
Resort “St. Constantine & St. Helena”, Varna, Bulgaria

MAIN HOTELS
Hotel "KORAL ****", ITA 2020 Conference place, 400m far from sea
https://hotel-koral.com/

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<thead>
<tr>
<th>Period: 20.06 - 05.07.2020</th>
<th>20.06 - 05.07.2020</th>
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Hotel "Gloria ***", 300m far from sea; 100m far from ITA 2020 Conference place
http://gloria.golden-hotelbg.com/

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<th>Period: 15.06 – 05.07.2020</th>
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<td>Single room</td>
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Hotel "Rusalka **", 300m far from sea; 100m far from ITA 2020 Conference place
http://www.hotelroussalka.com/

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<td>Person in a DBL room park</td>
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<td>Single room park</td>
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It is possible to book in every hotel in the resort as well as in Varna town using special discounts for ITA 2020 if one book via “HIT Tourism” Tour Operator.
Before using any booking system, please ask ITA 2020 for actual prices.
As a rule, Booking.com, as well as other booking systems, offers prices higher more than at least 15% than ours.
To use special hotels’ prices with additional discounts for all hotels, participants have to make reservation and payment only by HIT-Tourism Tour Operator.
Please send request for actual special prices to both addresses given below.
Send your requests for reservation and questions to both e-mails: office@hit-tourism.com and office@ithea.org.
If you not receive answer in a couple of days, please resend request!

Transfer airport - hotel:
car (1-4 sits): EURO 24 per car in one direction;
minivan (4-7 sits): EURO 30 per bus in one direction.
KDS 2020
XXVI-th International Conference
Knowledge - Dialogue - Solution
June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope
The Conference continues the series of annual international KDS events organized by V.M. Glushkov Institute of Cybernetics of National Academy of Sciences of Ukraine and Association of Developers and Users of Intelligent Systems (ADUIS).

Topics of interest
- Applied Information Systems
- Data Mining and Knowledge Discovery
- Decision Making
- Intelligent information technology
- Interdisciplinary Scientific Research
- Logical Inference
- NL Text Processing
- Neural and Growing Networks
- Mathematical methods research of complex systems
- Modern (e-) Learning and intelligent systems
- Philosophy and Methodology of Informatics
- Problems of Computer Intellectualization

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Language
The official languages of the conference are Russian and English.
CFDM 2020
XII-th International Conference
Classification, Forecasting, Data Mining
June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope
The conference is devoted to the current research and applications in the fields of Classification, Clustering, Pattern Recognition, Forecasting, Features Processing, Transformations, Data Mining, and Knowledge Discovery.

Topics of interest
- Pattern Recognition and Forecasting
- Machine Learning
- Data Mining
- Classification and Clustering
- Inductive Modeling
- Features Processing and Transformations
- Applications
- Image, Speech, Document and Signal Analysis
- Knowledge-Based Decision Support Systems

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Language
The official languages of the conference are Russian and English.
i.TECH 2020

XVIII-th International Conference

Information Technologies and Software Engineering

June 28 – July 01, 2020, Varna (Bulgaria)

Supported by ITHEA Software Engineering Forum http://idr.ithea.org/tiki-view_forum.php?forumId=1

Aims and Scope

The conference is aimed to represent research results and development activities in fields of Information Technologies and Software Engineering.

Topics of interest

Information Technologies
- Information Systems
- Mobile and Multimedia Systems
- Distributed and Telecommunication Systems
- Cyber Security

Software Engineering
- Fundamentals of Software Engineering
  - Software Engineering Standards Discussions and Reviews
  - Theoretical Aspects of Software Engineering
  - Domain Analysis and Engineering
  - Software Modeling Standards (UML, BPMN and Others)
  - Patterns in Software Engineering
- Software Life Cycle Management
  - Software Development Life Cycles Processes
  - Tools, Techniques, Algorithms and Methods for Management Software Development Life Cycle
  - AGILE and Model-Driven Development (MDD)
  - Software Product Lines
  - Reverse Software Engineering
  - Software and System Interoperability
- Software Applications and Development
  - Service-oriented Software Engineering
  - Distributed Application Development
  - Mobile Development
  - Software Technologies

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Language

The official languages of the conference are English and Russian.
**ITHEA International Scientific Society**

**MeL 2020**

XV-th International Conference

**Modern (e-) Learning**

June 28 – July 01, 2020, Varna (Bulgaria)

**Aims and Scope**

The conference is devoted to discussion of current research and applications regarding the basic directions of Modern (e-) Learning: Philosophy, Methodologies and Technologies.

**Topics of interest**

*Philosophy and Methodology of the Modern (e-) Learning*

- Accreditation and Validation of Modern (e-) Learning Materials
- Learning Communities and Virtual Spaces for Modern (e-) Learning Communities
- Copyright Regulations and Intellectual Property
- Evolution in Teacher Roles through Technology
- Experience and Problems of Implementation of Distance Learning Systems
- Informatics of the Modern Learning
- Instructional Design Theories of Modern (e-) Learning
- Institutional Issues on Technology-based Learning
- Interaction of Classical and Modern (e-) Learning
- Knowledge Market
- Modern (e-) Learning Paradigms
- Organizational Problems of Distance Learning
- Pedagogical and Organizational Frameworks of Modern (e-) Learning
- Pedagogical Approaches - Classical and Modern Didactic Principles of Modern (e-) Learning
- Policies on Technology-based Learning
- Psychological and Ergonomic Aspects of Modern (e-) Learning
- Social Aspects of Modern (e-) Learning
- Standardization of the Modern (e-) Learning Materials
- Standards and Quality Requirements for the Certification and Assessment of the Learners’ Progress
- Teaching Aspects of Modern (e-) Learning

*Modern e-Learning Technologies*

- Information Retrieval and Visualization in e-Learning
- Multimedia Educational Systems
- Media for Learning in Multicultural Settings
- Mobile e-Learning Applications
- P2P e-Learning Applications
- Social Aspects in Collaborative e-Learning Systems
- Standardization in e-Learning Technologies (Learning Objects, Designs, Modeling Languages)
- Technology-based Blended, Distance and Open Learning
- Technology-Facilitated Learning in Complex Domains
- Technologies for advanced Teacher Training
- Technology and Human Resource Issues
- Using AI/Semantic Web Technologies for Personalized and Contextual Learning
- Web-based Educational Information Systems
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Koen Vanhoof (Belgium)                       Liudmila Lyadova (Russia)
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Juan Castellanos (Spain)                    Yury Zaychenko (Ukraine)

Language

The official languages of the conference are Russian and English.

**ITHEA® MeL Workshop: Gamifying Computer Science Courses with OneUp Learning**

Organizers: Darina Dicheva and Christo Dichev

Are you looking for new ways to better engage and motivate your students? Do you want to try making your Computer Science course more attractive? We can help!

Come and see what the OneUp course gamification platform offers! You will learn how you can gamify your own classes and will get hands-on practice with using OneUp. Please bring your own laptop with WiFi access and the Chrome web browser, so that you can connect to OneUp.

**Abstract:**

The low performance and drop-outs in Computer Science classes are frequently attributed to lack of engagement and motivation. Meanwhile, gamification increasingly attracts the interest of educators due to its potential to foster motivation and behavioral changes in learning contexts. This workshop introduces participants to the concept of gamification and the use of OneUp Learning, a platform aimed at gamifying academic courses. OneUp is aimed at encouraging students’ out-of-class practicing and increasing their overall engagement in the course through employing game design elements. The platform is course-independent and highly configurable, allowing the instructor to turn on and off a number of gamification features, such as avatars, points (challenge and skill points), leaderboard, skills board, progress bar, content unlocking, goal-setting, badges, virtual currency, duels, chat, etc. For using OneUp, an instructor has to provide practice exercises and to specify the gamification elements to be used. Apart from the standard question types, OneUp supports Parson’s problems and dynamic problems (e.g. programming problems). The workshop proceeds in two sessions. In the first session we introduce the OneUp platform and present our experience of gamifying CS courses. In the second, workshop attendees engage in hands-on experience: we show them how to use OneUp in their classes. In particular, we assist them to create problems and challenges, to configure desired gamification features, to define their own badges and rules for earning and spending virtual currency, and to monitor the engagement and progress of their students. Laptops required.
Aims and Scope

Natural Computing can be broadly defined as the development of computer programs and computational algorithms using metaphorical inspiration from system and phenomena that occur in the natural world. Fundamentals of Natural Computing: Basic Concepts, Algorithms, and Applications present a wide-ranging survey of novel techniques and important applications of nature-based computing.

The goal of NIT International Conference is to offer a platform to critically assess present findings in the field, and to outline future developments in nature-inspired computing.

Original papers describing current research in the areas given below are invited, but other relevant areas also welcome. Papers in application areas of the same fields will also be considered.

Topics of interest

Topics of interest include, but are not limited to:

NATURAL COMPUTING
- Cellular Computing
- DNA Computing
- Evolutionary Computation
- Membrane Computing
- Molecular Computing
- Neural Computing
- Quantum Computing

APPLICATIONS OF NIT
- Bioinformatics
- Data Mining and Knowledge Discovery
- Decision Making and Decision Support Systems
- Evolvable Hardware
- Information Retrieval
- Knowledge Management
- Multi-agent Structures and Systems
- Natural Language Processing
- Robotics
- Synthetic Biology
- Web Intelligence
Steering Committee

Krassimir Markov, University of Telecommunications and Post & Institute on Information Theories and Applications, Bulgaria
Juan Castellanos, Universidad Politécnica de Madrid, Spain
Levon Aslanyan, Institute for Informatics and Automation Problems, Armenia

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Elena Chebanyuk, National Aviation University, Ukraine
Erzsebet Cshah-J-Varju, Hungarian Academy of Sciences, Hungary
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Luis Fernando de Mingo, Universidad Politécnica de Madrid, Spain
Marian Gheorghe, University of Sheffield, United Kingdom
Mario Pérez Jiménez, Universidad de Sevilla, Spain
Marion Oswald, Hungarian Academy of Sciences, Hungary
Martyn Amos, Manchester Metropolitan University, United Kingdom
Pedro Clemente Marijuan Fernandez, Aragon Institute of Health Sciences (I+CS), Spain
Rudolf Freund, Technische Universität Wien, Austria
Sandra Gómez Canaval, Universidad Politécnica de Madrid
Tasos Bezerianos, University of Patras, Greece
Victor Mitran, University of Bucharest, Romania
Vincenzo Manca, Università di Verona, Italy
Vladimir Ryazanov, Dorodnicyn Computing Centre of RAS, Russia
Yevgeniy Bodyanskiy, Kharkiv University, Ukraine

Language

The official language of the conference is English.

For contacts

- Juan Castellanos, e-mail: jcastellanos@fi.upm.es
- Krassimir Markov, e-mail: office@ithea.org
Aims and Scope

The conference is devoted to the representing of current research in the fields of concepts, methods, languages and tools of Informational Modeling and Simulation and their applications. The aim of the Conference is exchange the ideas and expertise among researches in industry, science and education and not formal coordination of their efforts.

Topics of the conference

1. AGILE and Model-Driven Development
   - Processing and Analysis of Software Models
   - Modeling Languages and Tools
   - Software Model Checking and Verification
   - Model-Driven Engineering
   - Model Execution and Simulation
   - Metamodels and Metamodelling

2. Informational Modeling and Simulation (IM&S) - Concepts, Paradigms, Approaches and Languages
   - Modeling and Simulation (M&S) Body of Knowledge
   - Knowledge Based IM&S. IM&S languages
   - IM&S Heterogeneous Structures and Scalability. High Level Architecture (HLA), Agent Base IM&S

3. IM&S Efficiency Enhancements
   - Methods for Efficiency Estimation, Comparison and Enhancement, Cooperative, Parallel and Distributed IM&S Efficiency
   - Accuracy enhancement and simulation speeding. Simulation Experiments Design
   - Real and IM&S Information Storage and Transmission Formats Data Analysis and Comparison Methods
   - Data Mining
   - Dynamic Adaptation and Personalization of the Human–Computer–Model Interaction

4. IM&S Efficacy Estimation and Life Cycle Management
   - Meta-modeling. Econometrical Meta-models M&S Efficacy Indicators
   - M&S Detailness and Life Cycle Optimization in respect of Designed Product Life Cycle
   - Management, Emergency Cases
   - Verification and Validation in IM&S Life Cycle.

5. IM&S Application Development Methods and Best Practices in Industry, Education and Science
   - IM&S Impact in Industry
   - IM&S in Science and Technology (S&T), Specifics in Information and Communication S&T
   - IM&S in and for Education
   - IM&S in Knowledge Market & Business Informatics
## Program Committee

<table>
<thead>
<tr>
<th>Alexander Palagin (Ukraine)</th>
<th>Juan Castellanos (Spain)</th>
<th>Olexii Voloshyn (Ukraine)</th>
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<tr>
<td>Anatolij Kornienko (Russia)</td>
<td>Koen Vanhoof (Belgium)</td>
<td>Olga Kalynychenko (Ukraine)</td>
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<td>Anatoliy Krissilov (Ukraine)</td>
<td>Krassimira Ivanova (Bulgaria)</td>
<td>Tamila Titova (Russia)</td>
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<td>Benoaz Depaire (Belgium)</td>
<td>Krassimir Markov (Bulgaria)</td>
<td>Tea Munjishvili (Georgia)</td>
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<td>Elena Chebanyuk (Ukraine)</td>
<td>Leonid Hulyanitsliy (Ukraine)</td>
<td>Vira Golyan (Ukraine)</td>
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<td>Elena Zamyatina (Russia)</td>
<td>Levon Aslanyan (Armenia)</td>
<td>Vitalii Velychko (Ukraine)</td>
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<td>Galina Gaivoronskaya (Ukraine)</td>
<td>Liadmila Lyadova (Russia)</td>
<td>Vitalii Vishnevskiy (Ukraine)</td>
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<td>Gergen Khachatryan (Armenia)</td>
<td>Natalia Ivanova (Russia)</td>
<td>Vladimir Romanov (Ukraine)</td>
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<td>Hasmik Sahakyan (Armenia)</td>
<td>Natalia Kussul (Ukraine)</td>
<td>Vladimir Shelestov (Ukraine)</td>
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<tr>
<td>Igor Galeluka (Ukraine)</td>
<td>Natalia Pankratova (Ukraine)</td>
<td>Yuri Zaichenko (Ukraine)</td>
</tr>
</tbody>
</table>

## Language

The official languages of the conference are English and Russian.
MIM 2020

X-th International Conference
Mathematics of Informational Modeling
June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope

The basic objective of the conference is the formulation and analysis of adequate mathematical models for the description and solution of practical engineering and related problems based on the understanding of their underlying informational structures, i.e. the mathematical foundation of information science (informatics). It includes Mathematical Logic (for Computer Science), Empirical Engineering, Theory on Algorithms, Information Theory, Coding Theory, Cryptology, Mathematical foundation of network processes and so on.

Topics of interest

- Automata theory and models
- Chaos and self-organization models
- Complex systems modeling and complexity of algorithms
- Intuitionist logic and Substructural logic
- Learning and Intelligence algorithms
- Modeling, Simulation, and Emulation: Mathematical theory, Formal verification
- Multisets theory and its applications
- Parallel algorithms, scientific computation and clouds
- Theory of named sets and its applications
- Uncertainty, Intuitionist Fuzzy Sets: Theory and Applications
- Cryptographic methods and protocols, Reliable and Secure Telecommunications
- Discrete geometry, Distances and Similarities, Tomography
- Financial mathematics, serious games
- Generalized nets and models
- Connectionism and Neural nets, Wavelet-neurons, and Emerging modeling objects

Program Committee

Alexander Palagin (Ukraine)  Liudmila Cheremisinova (Belarus)
Alexey Petrovskiy (Russia)   Krassimira Ivanova (Bulgaria)
Dmitro Buy (Ukraine)         Krassimir Markov (Bulgaria)
Elena Chebanyuk (Ukraine)    Liudmila Lyadova (Russia)
Elena Zamyatina (Russia)     Mikhail Alexandrov (Russia)
Emil Molnár (Hungary)        Natalia Pankratova (Ukraine)
Gurgen Khachatryan (Armenia) Olexii Voloshyn (Ukraine)
Hasmik Sahakyan (Armenia)    Sergey Krivii (Ukraine)
Juan Castellanos (Spain)     Sisir Roi (India)
Koen Vanhoof (Belgium)       Tsvetanka Kovacheva (Bulgaria)
Leonid Hulyanitskiy (Ukraine) Vitalii Velychko (Ukraine)
Levon Aslanyan (Armenia)     Yevgeniy Bodyanskiy (Ukraine)

Language

The official languages of the conference are English and Russian.
i-i-i 2020
XI-th International Conference
Information - Interaction - Intellect
June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope
The conference is devoted to discussion of current research and applications regarding the intelligent systems development:

Topics of interest
- Artificial Engineering
- Decision Making
- NL Text Processing
- Intelligent Technologies in Control and Design
- Multi-agent Structures and Systems
- Neural Networks

Steering Committee
Krassimir Markov (Bulgaria)
Vitalii Velychko (Ukraine)
Alexander Palagin (Ukraine)
Olexii Voloshyn (Ukraine)

Program Committee
Alexander Eremeev (Russia)
Alexey Petrovskiy (Russia)
Anatoliy Gupal (Ukraine)
Ekaterina Solovyova (Ukraine)
Elena Chebanyuk (Ukraine)
Galina Gaivoronskaya (Ukraine)
Galina Rybina (Russia)
Genady Osipov (Russia)
Irene Artemieva (Russia)
Krassimira Ivanova (Bulgaria)
Leonid Svyatogor (Ukraine)
Liudmila Cheremisnova (Belarus)
Martin Mintchev (Canada)
Natalia Bilous (Ukraine)
Natalia Kussul (Ukraine)
Olga Nevzorova (Russia)
Orly Yadid-Pecht (Israel)
Sergey Krivii (Ukraine)
Svetlana Cojocaru (Moldova)
Tatyana Gavrilova (Russia)
Tea Munjishvili (Georgia)
Valeriya Gribova (Russia)
Vassil Sgurev (Bulgaria)
Vitalii Vishnevskiy (Ukraine)
Yevgeniy Bodianskiy (Ukraine)
Yuri Zaychenko (Ukraine)

Language
The official languages of the conference are Russian and English.
KEBIDH 2020

VII-th International Conference

Knowledge Engineering in BioMedical Informatics and Digital Health

June 28 – July 01, 2020, Varna (Bulgaria)

Organized by:

Prof. Dr. Abdel-Badeeh M. Salem
Head of Bio-Medical Informatics & e-health Group
Artificial Intelligence & Knowledge Engineering Labs
Faculty of Computer and Information Sciences
Ain Shams University, Cairo, Egypt

Contact: absalem@cis.asu.edu.eg; abmsalem@yahoo.com
http://www.shams.edu.eg/staff/profile.php?action=show&pid=8256

Aims and Scope

KEBIDH 2020 will bring researchers, practitioners, developers, and users to present their latest ideas and research in all areas of bioinformatics, medical informatics, bioengineering, machine learning and artificial intelligence in all areas of digital health and life sciences.

KEBIDH 2020 will provide a forum for the exchange of ideas between knowledge engineers, biologists, physicians and computer scientists. Papers related to methodologies, techniques and applications in bioinformatics, medical informatics, telemedicine, and Health care are especially solicited.

Topics of interest

The topics of interest include, but are not limited to:
- Health Care Information Systems
- Clinical Information Systems
- Medical Image Processing and Techniques
- Medical Intelligent Systems for different medical tasks
- Medical Expert Systems
- Applications in Medical and Health Sciences
- Bioinformatics and Biostatistics
- Telemedicine Software, Portals, Devices and Telehealth
- Web-based and Remote Medicine
- Data Mining and Knowledge Discovery in Medicine
- Machine Learning-based Medical Systems
- Artificial Intelligence Techniques in Health Sciences
- Medical Databanks, Databases, and Knowledge Bases
- Neurocomputing in Medicine
- Ontology and Medical Information Science
- Bioethics and Health informatics

Steering Committee

Christina Siontorou, University of Piraeus, Greece
Florin Gorunescu, Univ. Medicine and Pharmacy of Craiova, Romania
Francesco Sicurello, University of Milan Bicocca, Italy
Halina Kwasnicka, Wroclaw University of Technology, Wroclaw, Poland
Isabelle Ellis, Department of Health and Human Services, University of Tasmania, Australia
Klaus Kayser, University of Berlin, Germany
Nataliya Pankratova, National Technical University of Ukraine, Ukraine
Nikitchenko Mykola, Taras Shevchenko National University of Kyiv, Ukraine
Peter Millard, Emeritus Professor of Geriatics, St. George’s University of London, UK
Roumen Kountchev, Technical University of Sofia, Bulgaria
Sarma Cakula, Vidzeme University of Applied Sciences, Valmiera, Latvia
Tatiana A. Gavrilova, Graduate School of Management, St. Petersburg State University, Russia
Urszula Markowska-Kaczmar, Wroclaw Uni. of Technology, Poland
Yukako Yagi, Harvard Medical School, Boston, MA, USA

Program Committee

Amr Badr, Faculty of Computers and Information, Cairo University, Cairo, Egypt
Andreea Ionica, University of Petrosani, Romania
Arzu Baloglu, Faculty of Engineering, Computer Engineering, Marmara University, Turkey
Elena Nechita, Vasile Alecsandri University, Bacau, Romania
Hassan Ghazal, Moroccan Society for Telemedicine and eHealth, Morocco
Hisham S. Katoua, King Abdulaziz University, Jeddah, Kingdom of Saudi Arabia
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Krasimira Stoilova, Bulgarian Academy of Sciences, Bulgaria
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Mariam Manjgaladze, Ivane Javakhishvili Tbilisi State University, Georgia
Marina Gorunescu, University of Craiova, Romania
Mohamed Roushdy, Ain Shams University, Egypt
Monica Leba, University of Petrosani, Romania
Nouhad Rizk, University of Houston, USA
Roumiana Kountcheva, Technical University of Sofia, Bulgaria
Sharon Condon, Rural Clinical School, University of Tasmania, Australia
Smaranda Belciug, Faculty of Sciences, University of Craiova, Romania
Svitlana Chebanyuk, Research and Practical Centre of Endovascular Neurosurgery at NAMS, Ukraine
Todor Stoilov, Bulgarian Academy of Sciences, Bulgaria
Valérie Monfort, SOIE Tunis, Univ. Paris1 Panthéon Sorbonne, Tunisia
Veska Georgieva, Technical University Sofia, Faculty of Telecommunications, Bulgaria
Xiao-Zhi Gao, School of Electrical Engineering, Aalto University, Finland

Language

The official language of the conference is English.
Cognitive Science - Approaches and Results towards Artificial Intelligence

June 28 – July 01, 2020, Sofia (Bulgaria)

Aims and Scope

The conference is centered on approaches and results obtained through the study of Cognition and Consciousness, their interpretation and application towards Artificial Intelligence.

Topics of interest

Researches, models in Cognitive Science as well as applications are welcomed.

The topics of interest include but are not limited to:

- Mental representations and mental operations
- Learning and Memory
- Perception in humans, animals, and machines (vision and machine vision, auditory perception, etc.)
- Natural language (psycholinguistics, language acquisition, conceptualization, meaning, etc.) and Natural Language Processing
- Emotions and emotion recognition
- Sentiment analyses
- Cognition and Consciousness
- Social cognition and consciousness
- Rethinking intelligence, including artificial

This large spectrum includes results and models in cognitive science, cognitive neuroscience, biometrics, brain imaging etc. as well as developed applications in neurocomputing, signal processing, pattern recognition, brain-computer interfaces, biometric technologies for human identification, models of society and human behavior etc.

Steering Committee

Velina Slavova, Department of Computer Science, New Bulgarian University, Sofia, Bulgaria
Krassimir Markov, Department of Informational Modeling, Institute of Mathematics and Informatics at BAS, Sofia, Bulgaria

Program Committee

Philip Andonov  Department of Computer Science, New Bulgarian University, Sofia, Bulgaria
Dimitar Atanasov  Department of Computer Science, New Bulgarian University, Sofia, Bulgaria
Jenny Benoix-Pinaut  UFR Mathématiques et Informatique Université Bordeaux, France
Entcho Gerganov  Department of Cognitive Science and Psychology, New Bulgarian University, Sofia, Bulgaria
Maurice Grinberg  Department of Cognitive Science and Psychology, New Bulgarian University, Sofia, Bulgaria
Borislav L. Gueorguiev  Southeast European Center for Semiotic Studies, New Bulgarian University, Sofia, Bulgaria
<table>
<thead>
<tr>
<th>Name</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iiro P Jääskeläinen</td>
<td>Department of Biomedical Engineering and Computational Science, Aalto University, Helsinki, Finland</td>
</tr>
<tr>
<td>Fernando Luis-Ferreira</td>
<td>Department of Electrical Engineering, New University of Lisbon, Portugal</td>
</tr>
<tr>
<td>Christophe Paoli</td>
<td>Department of Computer Engineering, Galatasaray Üniversitesi and UMR CNRS 6134 (France), Istanbul, Turkey</td>
</tr>
<tr>
<td>Ekaterina Pechenková</td>
<td>Research Institute of Neuropsychology of Speech and Writing, Moscow, Russia</td>
</tr>
<tr>
<td>Hichem Sahli</td>
<td>ETRO-Audio-Visual Signal Processing, Vrije Universiteit Brussel, Belgium</td>
</tr>
<tr>
<td>Albert Ali Salah</td>
<td>Department of Computer Engineering, Bogazici University, Istanbul, Turkey</td>
</tr>
<tr>
<td>Abdel-Badeeh M. Salem</td>
<td>Artificial Intelligence and Knowledge Engineering Research Labs, Faculty of Computer and Information sciences, Ain Shams University Abbassia, Cairo-Egypt</td>
</tr>
<tr>
<td>Hussein Samani</td>
<td>Institute for Cognitive Sciences Studies, Teherān, Iran</td>
</tr>
<tr>
<td>Alona Soschen</td>
<td>Chief Scientist cognitive linguistics, Amerge Software Inc., Otawwa, Canada</td>
</tr>
<tr>
<td>Vassil Vassilev</td>
<td>School of Computing, London Metropolitan University, London, UK</td>
</tr>
</tbody>
</table>

**Language**

The official language of the conference is English.
INFOS 2020
XIII-th International Conference
Intelligent Information and Engineering Systems
June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope
The conference is devoted to the discussion of current research, development and applications of the knowledge-based intelligent information and engineering systems.

Topics of interest

Theoretical foundations:
- Genetic Algorithms and Evolutionary Computing
- Expert Systems, Hybrid Intelligent Systems
- Fuzzy Techniques and Systems
- Intelligent Agents and Multi-Agent Systems
- Data Mining, Knowledge Acquisition
- Knowledge Discovery, Knowledge-Based Systems
- Knowledge Representation and Management
- Natural Language Processing, Speech Understanding
- Neural Networks, Machine Learning
- Software engineering and computing techniques

Intelligent Applications:
- Artificial Intelligence in Modeling and Simulation
- Bioinformatics using Intelligent and Machine Learning
- Business Intelligence Systems
- Human-Robot interaction, Image Processing
- Industrial Control and Monitoring
- Intelligent Agents Applications
- Intelligent Manufacturing Systems
- Intelligent Natural Language Systems
- Intelligent Robots
- Intelligent Tutoring Systems
- Intelligent Web Mining and Applications
- Medical and Diagnostic Systems
- Mobile Computing and Systems
- Multi-Media Intelligent Information Systems

Steering Committee
Galina Setlak, Rzeszow University of Technology, (Poland)
Krassimir Markov, Institute on Information Theories and Applications, (Bulgaria)

Program Committee
Alexander Troussov (IBM Research, Ireland)
Alfredo Milani (Italy)
Arcadiy Yuschenko (Russia)
Elena Chebanyuk (Ukraine)
Feliks Stachowicz (Poland)
Jacek Kluska (Poland)
Juan Penuella Castellanos (Spain)
Koen Vanhoof (Belgium)
Krzysztof Kubiak (Poland)
Leon Bobrowski (Poland)
Leonid Lubchyk (Ukraine)
Levon Aslanyan (Armenia)
Luis Fernando de Mingo Lopez (Spain)
Marek Orkisz (Poland)
Marian Wysocki (Poland)
Martin Mintchev (Canada)
Mikhail Alexandrov (Russia, Spain)
Olexii Voloshyn (Ukraine)
Olry Yadid-Pecht (Israel)
Sergey Maruev (Russia)
Vladimir Ryazanov (Russia)
Volodymyr Stepashko (Ukraine)
Xavier Blanco (Spain)
Yevgeniy Bodanskiy (Ukraine)
Yuriy Zaichenko (Ukraine)

Language
The official language is English.
GIT 2020

XVIII-th International Conference

General Information Theory

June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope

The conference objective is to present and discuss current achievement in the fields of the General Information Theory.

General Information Theory (GIT) is considered here not only as a pure theoretical discipline. While matter and energy are the foundation of material World, information is the foundation of the mental world as well as of the interactions in alive beings and within their communities. It is the leading factor in evolution and genetics. It is the basis of intellectual activity. Studying intelligence, we should take broader approach discovering the role of information, generally speaking, in life. The time has come to work out more uniform and general, deeper understanding of information processes which support the noosphere.

In this, broader sense, we should again and again turn our attention to the philosophy, interrelations between material and mental, correlate the notion of information in communication, biology, humanitarian areas and the physics of micro world.

We strongly believe that the progress in Artificial Intelligence is tightly tied with our deeper understanding of informational processes, in general. The conference is dedicated to this broad issue.

Topics of interest

Include, but are not limited to the main areas of GIT: (1) Theory of the Information, (2) Theory of the Information Subject (INFOS), and (3) Theory of the Information Interaction (INFORACTION):

Philosophy

• Philosophical background: material and mental – their coexistence and cooperation the role of humanitarian and natural science knowledge
• Creation of paradigms by intellectual systems
• Information and knowledge
• Information and life
• Non-forceful interaction

Cognitology, Gnoсеology and Semiotics

• Theory and methodology of World cognition by intellectual systems and communities
• Intellectual instruments of cognition: hypothesis, theories, experimental verification and falsification
• Role of knowledge systems: knowledge, experience, beliefs, conventions, prejudices, religions, myths, formal and metaphorical reasoning consciousness and self-consciousness
• Semiotics of knowledge acquisition and model construction
• Evolution and informational processes

Modern Physics

• Physics of information processes and informational background of physics
• What give quantum mechanics and other theories of micro world to our understanding of information exchange; principle of non locality, “spooky action at a distance”

Noosphere

• Noosphere and its informational component, simulated objects with different noosphere statuses
• AI systems' creation within the frame of integrated interaction with environment and goal oriented activity

Humanitarian Aspects

• Modeling Informational interaction in Nature and society: physical, social systems (psychology, egregors, sociopsychology) and beyond.
Steering Committee

Alexander Palagin (Ukraine)  Rafael Yusupov (Russia)
Anatoly Krissilov (Ukraine)  Vassil Sgurev (Bulgaria)
Krassimir Markov (Bulgaria)  Vitaliy Lozovskiy (Ukraine)
Mark Burgin (USA)  Vitalii Velychko (Ukraine)
Pedro C. Marijuán (Spain)  Yi Xin Zhong (China)

Program Committee

Alexey Petrovskiy (Russia)  Leonid Svyatogor (Ukraine)
Anatoliy Gupal (Ukraine)  Liudmila Cheremisinova (Belarus)
Ekaterina Solovyova (Ukraine)  Loet Leydesdorff (Netherlands)
Gordana Dodig Crnkovic (Sweden)  Michel Petitjean (France)
Gurgen Khachatryan (Armenia)  Qiao Tian-qing (China)
Guy A Hoelzer (USA)  Sergey Krivii (Ukraine)
Igor Gurevich (Russia)  Søren Brier (Denmark)
Jerry LR Chandler (USA)  Stanley N Salthe (USA)
Joseph Brenner (Switzerland)  Svetlana Cojocaru (Moldova)
Carl Javorszky (Austria)  Tatyana Gavrilova (Russia)
Koichiro Matsuno (Japan)  Walter Riofrio (Peru)
Krassimir Ivanova (Bulgaria)  Wolfgang Hofkirchner (Austria)
Christophe Menant (France)  Yevgeniy Bodyanskiy (Ukraine)

Language

The official languages of the conference are English and Russian.
ISSI 2020

XIV-th International Summer School on Informatics

June 28 – July 01, 2020, Varna (Bulgaria)

Aims and Scope

The Summer School of informatics is devoted to discussion of current researches, applications and education regarding the basic directions of information technologies, and business informatics:

- **Theoretical Foundations of Informatics**: Conceptions, Modern approaches of Software Development, and Advanced Information Technologies;


- **Informatics of/in Education (IE)**: IE Conceptions, including relation to other/traditional fields of study, Computer Aided IE, Methodology of IE.

Steering Committee

Abdel-Badeeh M. Salem (Egypt)  Hasmik Sahakyan (Armenia)  Lyudmila Kirichenko (Ukraine)
Elena Chebanyuk (Ukraine)  Koen Vanhoof (Belgium)  Lyudmila Lyadova (Russia)
Evgeny Eremin (Russia)  Krassimir Markov (Bulgaria)  Luis Fernando de Mingo (Spain)
Juan Castellanos (Spain)  Levon Aslanyan (Armenia)  Olexii Voloshyn (Ukraine)

Languages

The official languages of the Summer School are English and Russian.

Certificates

After passing finally tests successfully listeners of workshops will obtain *certificate* about training.

Doctoral consortium

Doctoral consortium proposes to PhD student opportunity to represent research results to ITHEA scientific counsil reviewers and discus them in warm friendly atmosphere.

Also you may obtain constructive advices about fundamental research, relating to your PhD topic. It will allow you to improve your research ground to adopt it for collaboration of modern tools and enviroments variety.

To participate at doctoral consortium event prepare paper, reflecting main results of your PhD. It should be from 8 to 10 pages. Rules for preparing paper manuscript are the same as preparing papers to journals.

Manuscript should be submitted before 30 days to staring of ITA 2020. Then it will be resend to three counsil members, having experience both in fundamental research and aquanting with achievement in industry for detail aquaintes. Then author has to present his work at ITA 2020 during 30 minutes. After this, the constructive notes from the reviewers will be discussed.

After presenting and polishing, manuscript may be published in ITHEA International Journals.

The cost of doctoral concorcium event for author is 60 euro to be paid directly at conference desk.

After presenting scientific results author obtain ITHEA sertificate about approbation of his work.

ITHEA reviewers that participate at PhD consideration also obtain certificate for consideration of scientific work in Internation doctoral consortium.
## Applications under Android operating system for Tablet PCs and Smart phones about Varna

<table>
<thead>
<tr>
<th>Application feature</th>
<th>Detailed information</th>
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<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td><strong>offline and online map of Varna</strong></td>
</tr>
<tr>
<td><strong>Application</strong></td>
<td><strong>Description</strong></td>
</tr>
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</table>

| **Purpose** | Varna city guide following your interests |
| **Application** | **Description** | This handy application presents you several self-guided walking tours to see the best of the Varna, Bulgaria, and it comes with detailed tour route maps and powerful navigation features to guide you from one sight to the next. No need to hop on a tour bus or join a tour group; now you can explore all of the best attractions on your own, at your own pace, and at a cost that is only a fraction of what you would normally pay for a guided tour.  Walking tours included in this application are:  * Varna Orientation Tour (8 sights)  * Museums in Varna (7 sights)  * Religious Sights (7 sights)  * Shopping Tour (8 sights)  * Sea Garden Tour (8 sights)  * Varna Nightlife (8 sights)  * Daily Life in Varna (7 sights) |

| **Purpose** | Good Bulgarian phrase-book |
| **Application** | **Description** | Bulgarian phrasebook will help tourists in any situation. The program will be useful for beginners (Bulgarian learners). |

| **Purpose** | Excellent Bulgarian phrase-book with pictures |
| **Application** | **Description** | Bulgarian phrasebook when phrases are divided by topics. The program will be useful for starting communication in bulgarian. |

| **Purpose** | Application opening Bulgaria with the heart |
| **Application** | **Description** | Bulgarian nature sights and a lot of interesting and useful facts |
Important information for participants in ITA 2020, Varna, Bulgaria

Please read carefully!

1. Contacts
Mobile numbers of the Organizing committee to be used during conference time:
+359 878 89 07 07, +359 878 89 07 25

2. Travel to the conference

2.1. From Varna
The Hotel “KORAL” of the “St. Constantine and St. Helena” resort is located less than 7 km by the way from Varna to the “Golden Sands” resort.
From Varna Airport and Bus station: bus No.: 409 to bus stop “Botanical Garden” (Botanicheska gradina).
From Varna Town Center the busses are: No.: 8 to the Center of “St. Constantine and St. Helena” resort and No.: 9 to bus stop “Botanical Garden” (Botanicheska gradina).
Please, see the map on the next page.

2.2. From Sofia
Besides the direct flight to Varna and/or the transfer flight from Sofia, there are two possible variants to get from Sofia to Varna:
- by train from the Central Railway Station: www.bdz.bg
- by bus from the Central Bus Station (right beside the Central Railway Station: www.centralnaavtogara.bg)

2.3. In Sofia
The metropolitan line from the Sofia Airport to the Central Railway Station and the Central Bus Station is still under construction, so the transportation to these stations may be:
- By bus – 84 or 284 from the Airport to “Hotel Pliska” stop, and then 213 or 214 to the Central Station; Note: Luggage bigger than the average will require an extra ticket as well.
- Shuttle-bus: from the airport to the station. The price is 1.60 BGN (possible additional taxes for the luggage).
- Taxicab: we do not recommend using this transport, or in case you do always check the prices on the stickers on the windows, because the foreigners especially are often offered incredibly high prices.

3. Medicines
We want to remind if you use some special medicines not to forget them.

4. Currency
The fixed official exchange rate: 1 EUR = 1.95583 BGN (leva).
In the change offices the exchange rate may vary from 1.9 to 1.95.
When you change money, please be careful when choosing the change office. At the airport usually the rates are not preferable.
Some change offices use on their front tables fixings which aren’t used for the standard procedures – it might be for write the fixing on the front table, which is not the real rate for usual exchange (it may be the rate for checks or for exchanged amount more than 10,000 lv.). Please, always read the all the notices (usually written with smaller letters) and ask the clerk for the exact total you’ll receive from the exchange.
We recommend exchanging not more than 50 EUR or USD at a time.

Caution!

Be careful with your money, documents and other important personal belongings. Make sure you keep them safe with yourself, not putting them in your luggage, as you can easily become a victim of pickpockets or thieves otherwise.
Please be alert in the city public transport as well as in the bus/train when approached by strangers and never leave your baggage unattended.
Bus No. 409 from airport and bus No. 9 from Varna bus stop “Botanical Garden”

Bus No. 8 from Varna last stop

Resort “St. Constantine & St. Helena”

50 m