



I T H E A



International Journal

INFORMATION

**CONTENT
&
PROCESSING**



2016 **Volume 3** **Number 2**



International Journal
INFORMATION CONTENT & PROCESSING
Volume 3 / 2016, Number 2

EDITORIAL BOARD

Editor in chief: **Krassimir Markov** (Bulgaria)

Abdel-Badeeh M. Salem (Egypt)	Gurgen Khachatryan (Armenia)	Oleksandr Stryzhak (Ukraine)
Abdelmgeid Amin Ali (Egypt)	Hasmik Sahakyan (Armenia)	Oleksandr Trofymchuk (Ukraine)
Albert Voronin (Ukraine)	Iliia Mitov (Bulgaria)	Orly Yadid-Pecht (Israel)
Alexander Eremeev (Russia)	Irina Artemieva (Russia)	Pedro Maríjuan (Spain)
Alexander Grigorov (Bulgaria)	Yurii Krak (Ukraine)	Rafael Yusupov (Russia)
Alexander Palagin (Ukraine)	Yurii Kryvonos (Ukraine)	Rozalina Dimova (Bulgaria)
Alexey Petrovskiy (Russia)	Jordan Tabov (Bulgaria)	Sergey Krivii (Ukraine)
Alexey Voloshin (Ukraine)	Juan Castellanos (Spain)	Stoyan Poryazov (Bulgaria)
Alfredo Milani (Italy)	Koen Vanhoof (Belgium)	Tatyana Gavrilova (Russia)
Anatoliy Gupal (Ukraine)	Krassimira Ivanova (Bulgaria)	Vadim Vagin (Russia)
Anatoliy Krissilov (Ukraine)	Levon Aslanyan (Armenia)	Valeria Gribova (Russia)
Arnold Sterenharz (Germany)	Luis Fernando de Mingo (Spain)	Vasil Sgurev (Bulgaria)
Benoa Depaire (Belgium)	Liudmila Cheremisinova (Belarus)	Velina Slavova (Bulgaria)
Diana Bogdanova (Russia)	Lyudmila Lyadova (Russia)	Vitalii Velychko (Ukraine)
Dmitro Buy (Ukraine)	Mark Burgin (USA)	Vitaliy Snituk (Ukraine)
Elena Zamyatina (Russia)	Martin P. Mintchev (Canada)	Vladimir Donchenko (Ukraine)
Ekaterina Solovyova (Ukraine)	Mikhail Alexandrov (Russia)	Vladimir Jotsov (Bulgaria)
Emiliya Saranova (Bulgaria)	Nadiia Volkovych (Ukraine)	Vladimir Ryazanov (Russia)
Evgeniy Bodyansky (Ukraine)	Nataliia Kussul (Ukraine)	Vladimir Shirokov (Ukraine)
Galyna Gayvoronska (Ukraine)	Natalia Ivanova (Russia)	Xenia Naidenova (Russia)
Galina Setlac (Poland)	Natalia Pankratova (Ukraine)	Yuriy Zaichenko (Ukraine)
Gordana Dodig Crnkovic (Sweden)	Olga Nevzorova (Russia)	Yurii Zhuravlev (Russia)

IJ ICP is official publisher of the scientific papers of the members of the ITHEA® International Scientific Society

IJ ICP rules for preparing the manuscripts are compulsory.

The rules for the papers for ITHEA International Journals as well as the **subscription fees** are given on www.ithea.org.

The papers should be submitted by ITHEA® Submission system <http://ij.ithea.org>.

Responsibility for papers published in IJ ICP belongs to authors.

International Journal "INFORMATION CONTENT AND PROCESSING" Volume 3, Number 2, 2016

Edited by the **Institute of Information Theories and Applications FOI ITHEA**, Bulgaria, in collaboration with

Institute of Mathematics and Informatics, BAS, Bulgaria,

V.M.Glushkov Institute of Cybernetics of NAS, Ukraine,

Universidad Politecnica de Madrid, Spain,

Hasselt University, Belgium

Institute of Informatics Problems of the RAS, Russia,

St. Petersburg Institute of Informatics, RAS, Russia

Institute for Informatics and Automation Problems, NAS of the Republic of Armenia.

Publisher: **ITHEA®**

Sofia, 1000, P.O.B. 775, Bulgaria. www.ithea.org, e-mail: office@ithea.org

Technical editor: Ina Markova

Printed in Bulgaria

Copyright © 2016 All rights reserved for the publisher and all authors.

© 2014 - 2016 "Information Content and Processing" is a trademark of ITHEA®

© ITHEA is a registered trade mark of FOI-Commerce Co.

ISSN 2367-5128 (printed)

ISSN 2367-5152 (online)