



**HAL**  
open science

## Preface

Cecilia Zanni-Merk, Claudia Frydman, Carlos Toro, Yulia Hicks, Robert Howlett, Lakhmi Jain

► **To cite this version:**

Cecilia Zanni-Merk, Claudia Frydman, Carlos Toro, Yulia Hicks, Robert Howlett, et al.. Preface. Procedia Computer Science, 2017, 112, pp.1 - 10. 10.1016/j.procs.2017.08.172 . hal-01824887

**HAL Id: hal-01824887**

**<https://amu.hal.science/hal-01824887v1>**

Submitted on 27 May 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License



## Preface

We are pleased to present this special issue of Elsevier's *Procedia Computer Science*, which consists of the proceedings of the 21<sup>st</sup> International Conference on Knowledge - Based and Intelligent Information & Engineering Systems (KES 2017) which was organised by the LSIS (Laboratoire des Sciences de l'Information et des Systèmes from Marseille, France) and KES International. The conference was held on September 6th to 8th, 2017 at the Saint Charles campus of Aix-Marseille University, next to the Vieux Port in Marseille.

KES 2017 was the 21<sup>st</sup> event in a series of broad-spectrum intelligent systems conferences first held in Adelaide, Australia in 1997. The main aim of this KES conference series is to provide an internationally respected forum for the dissemination of research results and the discussion of issues relating to the theory, technologies and applications of intelligent information and knowledge-based systems.

This year, this truly international conference attracted a substantial number of researchers and practitioners from all over the world, who submitted their papers to three general tracks, three thematic tracks and 29 special sessions on specific topics. Two workshops were also available for submissions. Accepted and presented papers highlighted the new trends and challenges of intelligent and knowledge-based systems. Each paper was peer reviewed by at least two members of the International Program Committee. A very high number of submissions were received; from them, 240 high-quality papers were accepted for oral presentation and publication in *Procedia Computer Science*. The quality of the research presented is reflected into indexing these proceedings in CPCi (ISI conferences), Engineering Index, and Scopus.

The editors of this volume would like to express our gratitude to the Keynote Speakers: Professors Agostino Bruzzone (Italy), Pierre Collet (France), Anne Håkansson (Sweden), Yuji Iwahori (Japan) and Christoph Reich (Germany).

We would like to acknowledge also the Programme Co-Chairs, the General Track Chairs, the International Programme Committee members and reviewers for their valuable efforts in the review process, helping us to guarantee the highest quality possible for the conference. We would also like to thank the organisers and chairs of the special sessions which make an essential

contribution to the success of the conference.

Lastly, we would like to thank all the authors, presenters and delegates for their valuable contribution in making this an extraordinary event.

We hope and intend that KES2017 has made a significant contribution to international research collaboration and understanding, an essential task for the promotion of scientific joint work and excellence.

**Professor Cecilia Zanni-Merk**  
**Professor Claudia Frydman**  
**Dr Carlos Toro**  
**Dr Yulia Hicks**  
**Professor Robert J. Howlett and**  
**Professor Lakhmi C. Jain**  
**Editors, KES2017 Proceedings**

## **Organisation**

### **Honorary Chair**

**Prof Lakhmi Jain**, Bournemouth University, UK and Canberra University, Australia

### **General Chairs**

**Prof Cecilia Zanni-Merk**, INSA Rouen Normandie / LITIS Laboratory, France

**Prof Claudia Frydman**, Aix-Marseille University / LSIS laboratory, France

### **Executive Chair**

**Prof Robert J. Howlett**, Bournemouth University, UK

### **Programme Chairs**

#### **General Track Programme Chairs**

**Dr Carlos Toro**, ARTC (Advanced Remanufacturing and Technology Centre) - A\*Star (Singapore)

**Prof Edward Szczerbicki**, The University of Newcastle, Australia

#### **Invited Sessions Programme Chair**

**Dr Yulia Hicks**, Cardiff University, Wales, UK

### **KES Conference Series**

KES2017 is part of the KES Conference Series

Conference Series Chairs:

**L.C.Jain** and **R.J.Howlett**

## International Programme Committee

<b>Name</b>	<b>Affiliation</b>
Prof. Akinori Abe	Chiba University, Japan
Dr. Jair Minoro Abe	Paulista University & University of São Paulo - Brazil
Dr. Walid Adly Atteya Abdo	Ein Shams University , Egypt
Prof. Yoshinori Adachi	Chubu University, Japan
Prof. Andrew Adamatzky	Unconventional Computing Centre, University of the West of England, Bristol, UK
Flora Amato	University of Naples Federico II
Dr. Alessia Amelio, Ph.D.	DIMES University of Calabria, Italy
Prof. Elisabeth Rakus-Andersson	Blekinge Institute of Technology, Department of Mathematics and Science, Sweden
Prof. Masayoshi Aritsugi	Kumamoto University, Japan
Dr. Piotr Artiemjew	University Warmia and Mazury, Poland
Dr. Ahmad Taher Azar	Faculty of Computers and Information, Benha University, Egypt
Prof. Natalia Bachtadze	Institute of Control Science of Russian Academy of Science, Russia
Prof. N.N. Bakhtadze	V.A. Trapeznikov Institute of Control Sciences, Moscow, Russia
Prof. Valentina E. Balas	Aurel Vlaicu University of Arad, Romania
Dr. Vivek Bannore	KES UniSA, Australia
Assist. Prof. Manish Bhardwaj	SRM University, India
Prof. Monica Bianchini	Dipartimento di Ingegneria dell'Informazione e Scienze Matematiche - Università degli Studi di Siena Italy
Dr. Francesco Bianconi	University of Perugia, Italy
Prof. Isabelle Bichindaritz	State University of New York at Oswego, USA
Dr. Zaki Brahmi	Sousse university, Tunisia
Dr. Gloria Bordogna	National Research Council of Italy, Italy
Prof. Sadok Bouamama	FCIT, University of Jeddah, KSA
Assist. Prof. Darko Brodić, Ph.D.	University of Belgrade, Serbia
Prof. Dumitru Dan Burdescu	University of Craiova, Romania
Assoc. Prof. Frantisek Capkovic	Institute of Informatics, Slovak Academy of Sciences , Slovakia
Prof. Michele Ceccarelli	University of Sannio, Italy

<b>Name</b>	<b>Affiliation</b>
Assoc. Prof. Dr. Adrian-Gabriel Chifu	Aix-Marseille Université, LSIS - France
Assist. Prof. Chintan Bhatt	Charotar University of Science And Technology (CHARUSAT), India
Prof. Stelvio Cimato	Dipartimento di Informatica Università degli studi di Milano Crema (CR) - Italy
Assoc. Prof. Paulo Cortez	University of Minho, Portugal
Dr. Paolo Crippa	Department of Information Engineering, Università Politecnica delle Marche, Ancona, Italy
Prof. Boguslaw Cyganek	AGH University of Science and Technology, Poland
Dr. Janos Botzheim	Tokyo Metropolitan University, Japan
Prof. Alfonso Mateos Caballero	Universidad Politécnica de Madrid, Spain
Prof. Andre Ponce de Leon F. de Carvalho	University of Sao Paulo, Brazil
Prof. Alfredo Cuzzocrea	ICAR-CNR & University of Calabria, Italy
Pankaj Deshwal	Division of Management, Netaji Subhas Institute of Technology, University of Delhi, India
Assoc. Prof. Diefang Chou	Tzu Chi University, Taiwan
Dr. Liya Ding	National University of Singapore, Singapore
Prof. Mark Embrechts	Rensselaer Polytechnic Institute, Troy, USA
Assoc. Prof. Anna Esposito	Seconda Università di Napoli, Dipartimento di Psicologia, Italy
Dr. Alena V. Favorskaya	Moscow Institute of Physics and Technology, Russia
Prof. Margarita Favorskaya	Siberian State Aerospace University, Russian Federation, Russia
Prof. Gianluigi Ferrari	University of Parma, Italy
Assoc. Prof. Dr. France Sébastien Fournier	Aix-Marseille Université, LSIS - France
Prof. Manuel Graña	Universidad del Pais Vasco, Spain
Dr. Foteini Grivokostopoulou	University of Patras, Greece
Prof. Otoniel Mario López Granado	Universidad Miguel Hernández, Spain
Prof. Anne Håkansson	KTH Royal Institute of Technology, Sweden
Prof. Saman K. Halgamuge	Melbourne School of Engineering, Australia
Dr. Moez Hammami	University of Tunis, Tunisia
Prof. Ronald Hartung	Franklin University and The Design Knowledge

<b>Name</b>	<b>Affiliation</b>
	Company, USA
Prof. Hiroshi Hasegawa	Department of Machinery & Control Systems, College of Systems Engineering and Science, Shibaura Institute of Technology, Japan
Prof. Ioannis Hatzilygeroudis	Department of Computer Engineering & Informatics, University of Patras, Greece
Dr. Yuki Hayashi	Osaka Prefecture University, Japan
Prof. Atsuo Hazeyama	Tokyo Gakugei University, Japan
Dr. Yulia A Hicks	Cardiff University, UK
Dr. Dawn. E. Holmes	University of California, Santa Barbara, USA
Prof. Katsuhiko Honda	Osaka Prefecture University, Japan
Asso.Prof.Dr. Daocheng Hong	Fudan University, ECNU & Victoria University, China
Distinguished Prof. Wei-Chiang Hong	Oriental Institute of Technology, Taiwan
Prof. Tzung-Pei Hong	National University of Kaohsiung, Taiwan
Prof R.J.Howlett	Bournemouth University, UK
Prof. Xiangpei Hu	Dalian University of Technology, Dalian, China
Prof. Ryutaro Ichise	National institute of Informatics, Japan
Dr. Shraddha Ingale	Pune University, India
Prof. Nobuhiro Inuzuka	Nagoya Institute of Technology, Japan
Assoc. Prof. Dr. Radu Tudor Ionescu	University of Bucharest, Romania
Prof. Dr. Yoshiteru Ishida	Toyohashi University of Technology, Japan
Prof. Mirjana Ivanovic	University of Novi Sad, Serbia
Prof. Yuji Iwahori	Chubu University, Japan
Prof. Ryszard Janicki	McMaster University, Hamilton, Ontario, Canada
Prof. Piotr Jedrzejowicz	Gdynia Maritime University, Department of Information Systems, Poland
Prof. Vladimir Jotsov	ULSIT - Sofia, Bulgaria
Prof. Hideyuki Kanematsu	National Institute of Technology, Suzuka College, Japan
Prof. Asoka Karunananda	University of Moratuwa, Sri Lanka
Prof. Nikos Karacapilidis	University of Patras, Greece
Prof. Radoslaw Piotr Katarzyniak	Wroclaw University of Technology, Poland
Assoc. Prof. Hiroko Kanoh	Yamagata University, Japan
Dr. Arkadiusz Kawa	Poznan University of Economics & Business, Poland

<b>Name</b>	<b>Affiliation</b>
Prof. Hiroharu Kawanaka	Mie University, Japan
Prof. Frank Klawonn	Ostfalia University, Wolfenbuettel, Germany
Prof. Tomoko Kojiri	Kansai University, Japan
Prof. Boris Kovalerchuk	Central Washington University, USA
Assist Prof. Pancercz Krzysztof	University of Rzeszow, Poland
Dr. Konrad Kułakowski	AGH University of Science and Technology, Poland
Prof. Mario Kusek	University of Zagreb, Croatia
Prof. Noriyuki Kushiro	Kyushu Institute of Technology, Japan
Prof. Kazuhiro Kuwabara	Ritsumeikan University, Japan
Dr. CP Lim	Deakin University, Australia
Prof. Chengjun Liu	New Jersey Institute of Technology, USA
Prof. Ignac Lovrek	University of Zagreb, Croatia
Prof. Dr. Gloria Phillips-Wren	Loyola University Maryland, USA
Neel Mani	ADAPT Centre, School of Computing, Dublin City University, Dublin, Ireland
Prof. Yoshiyuki Matsumoto	Shimonoseki City University, Japan
Dr. Kenji Matsuura	Tokushima University, Japan
Prof. Radko Mesiar	Slovak University of Technology Bratislava, Slovakia
Dr. Lyudmila Mihaylova	University of Sheffield, UK
Assist. Prof. Hirokazu Miura	Wakayama University, Japan
Dr. Daniel Moldt	University of Hamburg, Department of Informatics, Germany
Prof. Jose M. Molina	University Carlos III of Madrid, Spain
Prof. Stefania Montani	DISIT, Computer Science Institute, Universita' del Piemonte Orientale, Alessandria, Italy
Dr. Esmiralda Moradian	Stockholm University, Sweden
Dr. Antonio Moreno	Univ. Rovira i Virgili (URV), Spain
Prof. Mikhail Moshkov	KAUST, Saudi Arabia
Dr. Muhammad Marwan Muhammad Fuad	Aarhus University, Denmark
Prof. Mohamed A. Moustafa Hassan	Elec. Power Dept., Cairo University, Giza, Egypt
Prof. Dr, DSc. Andrew Nafalski	University of South Australia, Australia
Assist. Prof. Katsuko T. Nakahira	Nagaoka Institute of Technology, Japan
Prof. Grzegorz Nalepa	AGH University of Science and Technology, Poland



<b>Name</b>	<b>Affiliation</b>
Dr. Sergey Nesterov	University of South Australia, Australia
Assoc. Prof. Ioannis K. Nikolos	School of Production Engineering and Management, Technical University of Crete, Chania, Greece
Dr. Piotr Nikończuk	West Pomeranian University of Technology, Szczecin Faculty of Maritime Technology and Transport, Poland
Shastri L Nimmagadda	School of Information Systems, Curtin Business School, Curtin University, Perth, Australia
Prof. Kazunori Nishino	Kyushu Institute of Technology, Japan
Prof. Jörg Rainer NOENNIG	HafenCity Universität Hamburg (HCU): CityScienceLab, Germany
Dr. Housseem Eddine Nouri	University of Tunis, Tunisia
Prof. Roy Oberhauser	Aalen University, German
Prof. Nobuyuki Ogawa	National Institute of Technology, Gifu College, Japan
Prof. Yukio Ohsawa	Univesity of Tokyo, Japan
Dr. Osvaldo Luiz Oliveira	Faccamp, Brazil
Prof. Kenta Oku	Ryukoku University, Japan
Prof. Cezary Orłowski	WSB University in Gdańsk, Poland
Dr. Wieslaw Paja	University of Rzeszow, Poland
Prof. Marcin Paprzycki	Polish Academy of Sciences, Poland
Prof. Manuel González Penedo	Centro Tecnológico de Información y Comunicaciones (CITIC); Universidad de A Coruña, Spain
Dr. Isidoros Perikos	University of Patras, Greece
Prof. Petra Perner	Institute of Computer Vision and applied Computer Sciences Leipzig, Germany
Prof. Georg Peters	Munich University of Applied Sciences, Germany
Prof. Alfredo Petrosino	University of Naples Parthenope, Italy
Prof. Lech T. Polkowski	Polish-Japanese Institute of Information Technology, Warszawa, Poland
Assoc. Prof. Dr. Marius Popescu	University of Bucharest, Romania
Prof. Luigi Portinale	University of Piemonte Orientale, Italy
Prof. Jim Prentzas	Democritus University of Thrace, Greece
Prof. Anca Ralescu	EECS Department, University of Cincinnati, USA
Dr. Rajesh Reghunadhan	Central University of Bihar, India
Prof. Ana Respício	Universidade de Lisboa, Portugal
Dr. Marina Resta	Department of Economics and Business Studies,

<b>Name</b>	<b>Affiliation</b>
	university of Genova, Italy
Dr. Goce Ristanoski	Data61, CSIRO, Australia
Dr. Fernando Roda	CIFASIS (Centro Internacional Franco Argentino de Ciencias de la Información y de Sistemas) - CONICET - UNR, Rosario, Argentina
Dr. Fabrice Rossi	SAMM Université Paris 1, France
Prof. Jose Hiroki Saito	UFSCar/FACCAMP, Brazil
Prof. Virgilijus Sakalauskas	Vilnius University, Department of Informatics, Lithuania
Prof. Marcello Sanguineti	University of Genova, Italy
Dr. Hirosato Seki	Osaka University, Japan
Prof. Rafał Scherer	Częstochowa University of Technology, Poland
Dr. Rainer Schmidt	University of Rostock, Germany
Dr. Milan Simic	RMIT University, School of Engineering, Melbourne, Australia
Prof. Andrzej Sluzek	Khalifa University, Abu Dhabi, UAE
Assoc. Prof. Masato Soga	Wakayama University, Japan
Dr. Roman Sperka	Silesian University in Opava, Czech Republic
Dr. Maria Spichkova	RMIT University, School of Science, Japan
Dr. Urszula Stanczyk	Silesian University of Technology, Gliwice, Poland
Assoc. Prof. Ruxandra Stoean	University of Craiova, Romania
Prof. Toshiharu Sugawara	Waseda University, Japan
Assoc. Prof. Lijun Sun	Dalian University of Technology, Dalian, China
Dr. Nobuo Suzuki	Advanced Telecommunications Research Institute International, Japan
Prof. Edward Szczerbicki	University of Newcastle, Australia
Prof. Eulalia Szmidt	Polish Academy of Sciences, Warsaw, Poland
Dr. Piotr Szczuko	Faculty of Electronics, Telecommunications, and Informatics, Gdańsk University of Technology, Poland
Assoc. Prof. Dr. Haruhiko Takase	Mie University, Japan
Dr. Prof. Masakazu Takahashi	Yamaguchi University, Japan
Prof. Hirokazu Taki	Wakayama University, Japan
Prof. Dr. Mieko Tanaka-Yamawaki	Meiji University, Japan
Dr. Dilhan Thilakarathne	VU University Amsterdam, Netherlands
Dr. Masahiro Tokumitsu	National Institute of Technology, Yonago College, Japan

<b>Name</b>	<b>Affiliation</b>
Dr. Carlos Toro	Vicomtech-IK4 research Centre, Spain
Prof. Ljiljana Trajkovic	Simon Fraser University, Canada
Assist. Prof. Thrasyvoulos Tsiatsos	University of Thessaloniki, Greece
Prof. Kazuhiko Tsuda	The University of TSUKUBA, Tokyo
Prof. Shusaku Tsumoto	Shimane University, Japan
Dr. Jeffrey W. Tweedale	Defence Science and Technology Organisation, Australia
Dr. Angelina Tzacheva	University of North Carolina at Charlotte, USA
Prof. Eiji Uchino	Yamaguchi University, Japan
Prof. Taketoshi Ushiyama	Kyushu University, Japan
Dr. Pandian Vasant	Universiti Teknologi PETRONAS, Tronoh, Malaysia
Dr Neil Vaughan BSc (Hons) PhD	Bournemouth University, UK
Prof. Junzo Watada	Waseda University, Japan
Prof. Toyohide Watanabe	Nagoya Industrial Science Research Institute, Japan
Assoc. Prof. Dr. Yuji Watanabe	Nagoya City University, Japan
Assistant Prof. Paja Wieslaw	University of Rzeszow, Poland
Prof. Michał Woźniak	Wroclaw University of Science and Technology, Poland
Prof. Yoshiyuki Yabuuchi	Shimonoseki City University, Japan
Prof. Katsutoshi Yada	Kansai University, Japan
Prof. Kuniaki Yajima	National Institute of Technology, Sendai College, Japan
Prof. Takahira Yamaguchi	Keio University, Japan
Prof. Dr. Shuichiro Yamamoto	Nagoya University, Japan
Assist. Prof. Ryosuke Yamanishi	Ritsumeikan University, Japan
Prof. Atsuko K. Yamazaki, Ph.D.	Faculty of Engineering, Shibaura Institute of Technology, Japan
Dr. Gregory Zacharewicz	IMS Université de Bordeaux, France
Prof. Oleg Zaikin	Warsaw School of Computer Science, Poland
Prof. Gesa Ziemer	HafenCity University Hamburg, Germany
Prof. Alfred Zimmermann	Reutlingen University, Germany
Dr. Sergey V. Zykov	National Research University – Higher School of Economics, Russia - and - MEPhI National Nuclear Research University, Russia