

ODEBIO 2018 - Outlier Detection for Biomedical Applications (ins)

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Organizer : NYMT

Venue :

Location Hotel Vila Galã© Santa Cruz Rua So Fernando, 5 9100-173 Santa Cruz Portugal,
: Santa Cruz, Portugal, US, ZIP: 59100-173

Special Session on Outlier Detection for Biomedical Applications - ODEBIO 2018

19 - 21 January, 2018 - Funchal, Madeira, Portugal

Within the 11th International Conference on Bio-inspired Systems and Signal Processing - BIOSIGNALS 2018

CO-CHAIRS

▣ **Agnieszka Duraj**

Lodz University of Technology
Poland

Brief Bio

Agnieszka Duraj received her MSc in IT from the Faculty of Technical Physics, Information Technology and Applied Mathematics of Lodz University of Technology in 1998, and her PhD, also in IT, from the Faculty of Telecommunications Engineering, Electrical Engineering,

Bioengineering of the University of Zielona Góra, Poland, in 2007. In the years 1998-2007 she was working as assistant and since 2008 – as assistant professor in the Institute of Information Technology of this university. She is a member of the Polish Cybernetic Society, Polish Medical Association of Medical Informatics, and Polish Society of Applied Electromagnetics. She is Session Organizer for the 2017 IEEE International Conference on Innovations in Intelligent Systems and Applications. She is working in the field of data analysis, data mining, outlier detection and mining, pattern recognition, and computational intelligence. The fields of application are: electrical engineering and medicine. Mrs. Duraj is an author and co-author of 40 scientific journal papers and conference contributions. She was awarded by Rector of the Lodz University of Technology.

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Piotr Szczepaniak

Lodz University of Technology
Poland

Brief Bio

Piotr S. Szczepaniak received the MSc degree in automatic control from the Faculty of Electrical Engineering of the Lodz University of Technology, Poland, in 1977, and the PhD in automatic control and DSc in computer science both from the Technical University of Dresden, Germany, in 1982, and 1990, respectively. In 2005, he obtained the full professor title from the President of Poland. In the years 1996-2003 he was and since 2012 he is Head of the Institute of Information Technology of the Lodz University of Technology. Between 2005 and 2008 he was Dean of the Faculty of Technical Physics, Information Technology and Applied Mathematics. Since 2008 till 2012, he has been the Vice-rector for University Development and Business Affairs and since 2012 is a Vice-rector for University Development. In the years 1999-2008, he was a member of Systems Research Institute of the Polish Academy of Sciences. He is the organizer and he was the first President of the ICT Cluster of Central Poland. He is a member of the Polish Cybernetic Society, Polish Neural Networks Society, IEEE Signal Processing Society and the Senior Member of the IEEE Computer Society. His research experience covers optimal control theory, sensitivity analysis, and approximation of dynamic time-delay systems. At present, he is working in the field of computational intelligence and its applications to image analysis, pattern recognition, knowledge extraction and development of medical systems. His publishing activity is evidenced by over 160 individual or collective journal papers and conference contributions, as well as by the edition of books published by Springer-Verlag.

SCOPE

The Outlier Detection for Biomedical Applications - Special Session at BIOSTEC, the 11th International Joint Conference on Biomedical Engineering Systems and Technologies is dedicated to broadly understood issues of outlier detection in large data sets, including big data. Detection of outliers is the basis for decision-making processes, classification, grouping and methods of intelligence. The problem of anomaly detection encompasses a wide spectrum of

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applied methods. ODEBIO session is therefore an opportunity to identify new research directions and presentation of original research results. It is also an opportunity for exchanging and diffusing innovative and practical experience in this field.

The scope of ODEBIO 2018 includes, but is not limited to the following issues:

- Probabilistic and statistical models for outlier detection
- Grade correspondence analysis for outlier detection
- Outlier detection based on distance, density, depth, deviation etc.
- Evolutionary algorithms for outlier detection
- Outlier detection in categorical, text, mixed attribute data, stream data, image and image sequences
- Outlier analysis in graphs, networks
- Outlier detection in big data
- Application of outlier analysis in biomedicine and healthcare

Important Dates

Conference

Regular Papers

Paper Submission: September 5, 2017 (extended)

Authors Notification: October 16, 2017

Camera Ready and Registration: October 30, 2017

Position Papers

Paper Submission: September 29, 2017

Authors Notification: November 7, 2017

Camera Ready and Registration: November 20, 2017

Workshops

Workshop Proposal: August 31, 2017

Doctoral Consortium

Paper Submission: November 9, 2017

Authors Notification: November 22, 2017

Camera Ready and Registration: December 5, 2017

Special Sessions

Special Session Proposal: August 31, 2017

Paper Submission: November 7, 2017

Authors Notification: November 21, 2017

Camera Ready and Registration: November 29, 2017

Tutorials

Tutorial Proposal: November 24, 2017

Demos

Demo Proposal: November 24, 2017

Panels

Panel Proposal: November 24, 2017

Keynote Lectures

Available Soon

Anatole Lécuyer, Inria Rennes/IRISA, Hybrid Research Team, France

Available Soon

Corina Sas, Lancaster University, United Kingdom

Available Soon

Dinesh Kumar, RMIT University, Australia

Available Soon

Maximiliano Romero, Università luav di Venezia, Italy

Keynote Lecture

□ **Anatole Lécuyer**

Inria Rennes/IRISA, Hybrid Research Team

France

Brief Bio

Anatole Lécuyer is senior researcher and head of Hybrid team at Inria (Rennes, France), the French National Institute for Research in Computer Science and Control, that he joined in 2002. His main research interests are in the field of Virtual Reality, and more specifically on 3D User Interfaces, Haptic Feedback, 3D Visual Displays, and Brain-Computer Interfaces (BCI). He has been involved often as coordinator or principal investigator in various National or International research projects such as in OpenViBE software for Brain-Computer Interfaces, French ANR

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projects “OpenViBE1” (05-09) and “OpenViBE2” (09-12) on Brain-Computer Interfaces and Virtual reality, European Strep project “NIW” (08-11) on Augmented Walking, and the European Network of Excellence “INTUITION” (05-08) on Virtual Reality. He regularly serves as expert in Virtual Reality and BCI for public bodies such as European Commission (EC) or French National Research Agency (ANR). He is involved in program committees of major conferences of his field (IEEE VR, IEEE 3DUI, Eurohaptics, Eurographics, etc) and was notably program co-chair of IEEE VR 2015, and IEEE 3DUI 2013. He is an associate editor of Frontiers in Virtual Environments and Presence, and formerly of ACM Transactions on Applied Perception (ACM TAP) and International Journal of Human-Computer Studies (IJHCS).

Keynote Lecture

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Corina Sas
Lancaster University
United Kingdom

Brief Bio

Dr Sas builds on extensive expertise in Human Computer Interaction and user experience to design technologies for wellbeing and health, including those for self-monitoring, self-awareness and self-regulation. She has been Associate Chair for the top ACM Computer Human Interaction and Designing Interactive Systems conferences, Chair of British Human Computer Interaction conference, and served in Programme Committees in over 20 conferences. Her work has received extensive media covers including The Times, The New Scientist, Daily Mail, CBS, NBC, Medical Daily, Science Daily, News medical, and Health Medicine Network, as well as San Francisco radio, BBC 5 live radio, and BBC Hereford and Worcester radio. For her work on technologies for mindfulness she was mentioned in the TransTech200 (2016): an annual list of key innovators developing science-based research that significantly increases mental and emotional wellbeing. She has over 80 peer-reviewed publications, and has been an investigator on grants totalling over £10.5 million.

Keynote Lecture

□ **Dinesh Kumar**
RMIT University
Australia

Brief Bio

Dinesh research interests are related to medical applications of signals and image processing and the use of machine learning to classify medical signals. He is a member of the expert panel for prosthetic hand control (EU supported committee) and member on Therapeutic Goods Administration the advisory panel to ministry of health for medical devices. Dinesh has also extensive experience in technology translation and been successful with two technology start-up ventures.

Dinesh has received over \$4 million in research funds over the past 12 years in research funding. He has published over 400 papers and authored 3 books, and has been cited about 4400 times. He is Associate editor for IEEE Transactions for neural systems and rehabilitation engineering.

Abstract

There has been significant progress in medical technology that provides early stage and detailed diagnosis of many diseases. This has enhanced the longevity and quality of life and we are now living longer and healthier, and significantly more independent. We are also able to perform relevant functional activities for significant period. However, many of these diagnostics can be performed only in major hospitals and require significant infrastructure such as qualified personnel, buildings, and electricity. This greatly limits the benefits of the technologies to be located in large urban centres.

Dinesh has been working towards changing the above paradigm and works for the development of diagnostic devices that are suitable for being used in remote regions by untrained healthcare personnel. Such devices provide automation of recording and analysis of the data, thereby do not require large buildings, and are suitable for the target audience. The success of such diagnostic devices is based on the development of advanced image and signal processing techniques that makes these devices noise tolerant and provide good quality diagnostics without high quality infrastructure.

Keynote Lecture

□ **Maximiliano Romero**
Università luav di Venezia

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Italy

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