



**IEEE World Congress on Computational Intelligence**  
08-13 July 2018, Rio de Janeiro , Brazil  
[www.ieee-wcci.org](http://www.ieee-wcci.org)

## **WCCI 2018 Special Session on Machine Learning and Deep Learning Methods applied to Vision and Robotics (MLDLMVR)**

Aims:

Over the last decades there has been an increasing interest in using machine learning and in the last few years, deep learning methods, combined with other vision techniques to create autonomous systems that solve vision problems in different fields. This special session is designed to serve researchers and developers to publish original, innovative and state-of-the art algorithms and architectures for real time applications in the areas of computer vision, image processing, biometrics, virtual and augmented reality, neural networks, intelligent interfaces and biomimetic object-vision recognition.

This special session provides a platform for academics, developers, and industry-related researchers belonging to the vast communities of \*Neural Networks\*, \*Computational Intelligence\*, \*Machine Learning\*, \*Deep Learning\*, \*Biometrics\*, \*Vision systems\*, and \*Robotics \*, to discuss, share experience and explore traditional and new areas of the computer vision, machine and deep learning combined to solve a range of problems. The objective of the workshop is to integrate the growing international community of researchers working on the application of Machine Learning and Deep Learning Methods in Vision and Robotics to a fruitful discussion on the evolution and the benefits of this technology to the society.

The methods and tools applied to vision and robotics include, but are not limited to, the following:

- Computational Intelligence methods
- Machine Learning methods
- Self-adaptation and self-organisation
- Robust computer vision algorithms (operation under variable conditions, object tracking, behaviour analysis and learning, scene segmentation,,,,)
- Extraction of Biometric Features (fingerprint, iris, face, voice, palm, gait)
- Convolutional Neural Networks CNN
- Recurrent Neural Networks RNN
- Deep Reinforcement Learning DRL

- Hardware implementation and algorithms acceleration (GPUs, FPGA,s,...)

The fields of application can be identified, but are not limited to, the following:

- Video and Image Processing
- Video tracking
- 3D Scene reconstruction
- 3D Tracking in Virtual Reality Environments
- 3D Volume visualization
- Intelligent Interfaces (User-friendly Man Machine Interface)
- Multi-camera and RGB-D camera systems
- Multi-modal Human Pose Recovery and Behavior Analysis
- Gesture and posture analysis and recognition
- Biometric Identification and Recognition
- Extraction of Biometric Features (fingerprint, iris, face, voice, palm, gait)
- Surveillance systems
- Autonomous and Social Robots
- Robotic vision
- Industry 4.0
- IoT and Cyber-physical Systems

**Important dates:**

Paper Submission Deadline  
January 15, 2018

**Paper acceptance notification date**

March 15, 2018

**Final paper submission deadline**

May 1, 2018

**Conference**

July 08-13, 2018

**Submission Guidelines:**

Please follow the regular submission guidelines of WCCI 2018. Please notify the chairs of your submission by sending an email to: [jgarcia@dtic.ua.es](mailto:jgarcia@dtic.ua.es).

**Journal special Issue**

A Journal special Issue with extended versions of best special session papers is being managed.

Previous special session best papers were published in Neural Processing Letters 2014 and Neural Computing and Applications 2015, Expert Systems 2017.

**Chairs:**

José García-Rodríguez -University of Alicante (Spain) [jgarcia@dtic.ua.es](mailto:jgarcia@dtic.ua.es)  
Alexandra Psarrou – University of Westminster (UK) [psarroa@wmin.ac.uk](mailto:psarroa@wmin.ac.uk)

Isabelle Guyon - , U. Paris-Saclay, France and ChaLearn, USA [guyon@clopinet.com](mailto:guyon@clopinet.com)  
Andrew Lewis – Griffith University (Australia) [a.lewis@griffith.edu.au](mailto:a.lewis@griffith.edu.au)

### **Program Committee:**

Lourdes de Agapito – University College of London of London UCL (UK)  
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Magnus Johnsson – Lund University (Sweden)  
Juxi Leitner – Australian Centre for Robotic Vision (ACRV) QUT (Australia)  
Markos Mentzelopoulos – University of Westminster (UK)  
Eduardo Nebot – Australian Centre for Field Robotics (Australia)  
Sergio Orts – University of Alicante (Spain)  
Asim Roy (Arizona State University, USA)  
Peter Roth – TU Graz (Austria)  
Sergio Velastin – Kingston University (UK)

### **Contact:**

Email: [jgarcia@dtic.ua.es](mailto:jgarcia@dtic.ua.es)

Main Conference webpage: <http://www.ecomp.poli.br/~wcci2018/>

Special session webpage: <http://www.dtic.ua.es/~jgarcia/IJCNN2018/>

### **Biographies**

**Jose Garcia-Rodriguez** received his Ph.D. degree, with specialization in Computer Vision and Neural Networks, from the University of Alicante (Spain). He is currently Associate Professor at the Department of Computer Technology of the University of Alicante. His research areas of interest include: computer vision, computational intelligence, machine learning, deep learning, pattern recognition, robotics, man-machine interfaces, ambient intelligence, computational chemistry, and parallel and multicore architectures. He has authored +120 publications in journals and top conferences and revised papers for several journals like Journal of Machine Learning Research, Computational intelligence, Neurocomputing, Neural Networks, Applied Softcomputing, Image Vision and Computing, Journal of Computer Mathematics, IET on Image Processing, SPIE Optical Engineering and many others, chairing sessions in the last four editions of IJCNN and IWANN and participating in program committees of several conferences including IJCNN, ICRA, ICANN, IWANN, KES, ICDP and many others.

**Alexandra Psarrou** is Head of the Computer Science and Software Engineering Department at the University of Westminster. Psarrou received her BSc in Computer Science (1987) and MSc in Advanced Computer Science (1988) from Queen Mary University of London. Following her graduation Psarrou worked as a Knowledge Engineer on an AI assisted system (AICQS) for the support of UNISYS customer services (1988-1990) and as a Research Fellow on an SERC medical image interpretation project for the dynamic modelling of cancerous cells (1990-1992). The latter project initiated Psarrou's interest in motion-based recognition and the analysis of visual behaviour. Psarrou received her PhD from Queen Mary, London in 1996 with a thesis on the use of artificial neural networks for motion-based recognition. Since 1996 Psarrou has been working on the modelling of temporal trajectories for face, gesture and gait recognition, modelling and tracking of non-rigid objects using growing neural networks and content-based retrieval from image and video databases. Psarrou joined the University of Westminster as Lecturer in 1993. She was appointed Reader and research centre director in 1999 and Head of Department in 2003. Psarrou established the Computer Vision Laboratory at the University of Westminster and has published over 60 papers in computer vision and neural networks and a book on "Dynamic Vision: From Images to Face Recognition" with Shaogang Gong and Stephen McKenna.

**Isabelle Guyon** Guyon is chaired professor in "big data" at the Université Paris-Saclay, specialized in statistical data analysis, pattern recognition and machine learning. She is one of the co-founders of the ChaLearn Looking at People (LAP) challenge series and she pioneered applications of the Microsoft Kinect to gesture recognition. Her areas of expertise include computer vision and bioinformatics. Prior to joining Paris-Saclay she worked as an independent consultant and was a researcher at AT&T Bell Laboratories, where she pioneered applications of neural networks to pen computer interfaces (with collaborators including Yann LeCun and Yoshua Bengio) and co-invented with Bernhard Boser and Vladimir Vapnik Support Vector Machines (SVM), which became a textbook machine learning method. She worked on early applications of Convolutional Neural Networks (CNN) to handwriting recognition in the 1990's. She is also the primary inventor of SVM-RFE, a variable selection technique based on SVM. The SVM-RFE paper has thousands of citations and is often used as a reference method against which new feature selection methods are benchmarked. She also authored a seminal paper on feature selection that received thousands of citations. She organized many challenges in Machine Learning since 2003 supported by the EU network Pascal2, NSF, and DARPA, with prizes sponsored by Microsoft, Google, Facebook, Amazon, Disney Research, and Texas Instrument. Isabelle Guyon holds a Ph.D. degree in Physical Sciences of the University Pierre and Marie Curie, Paris, France. She is president of Chalearn, a non-profit dedicated to organizing challenges, vice-president of the Unipen foundation, adjunct professor at New-York University, action editor of the Journal of Machine Learning Research, editor of the Challenges in Machine Learning book series of Microtome, and program chair of the upcoming NIPS 2016 conference..

**Andrew Lewis** is a Senior Research Specialist in eResearch Services and an Adjunct Senior Lecturer in ICT at Griffith University. He received his BE in

Computer Engineering from the University of Newcastle, Australia, and his PhD in Computer Science from Griffith University, Australia. Prior to his employment with the University, he worked in industrial applied research with BHP Billiton. His research interests include: parallel optimisation algorithms for large numerical simulations, including gradient descent, direct search methods, evolutionary programming, particle swarm and ant colony systems, multi-objective optimisation techniques for engineering design, parallel, distributed and grid computing methods, and techniques and applications of advanced visualisation. He has numerous publications across this range of topics, particularly in the area of optimisation algorithms and applications.