



18th IEEE International Conference on Cognitive Informatics and Cognitive Computing



Politecnico di Milano University
32, Piazza Leonardo da Vinci, 20133 Milano, Italy
Venue: Magna Room, First Floor, Building 1

Tuesday, July 23, 2019	
08:00 - 09:00 Registration (Magna Room Balcony, Buld. 1)	
09:00 - 09:30 Welcome Co-chairs (De Donato Room, Buld. 3)	
09:30 - 10:10 Keynote 1 Transdisciplinary Convergence of Human-Centric Robotic Systems and Cybernetics Prof. Edward Tunstel, President, IEEE SMCS Chair: Yingxu Wang (De Donato Room)	
10:10 - 10:30 Coffee Break Magna Room Balcony (Buld. 1)	
10:30 - 11:30, Parallel Sessions	
Session A: De Donato Room (Buld. 3)	Session B: Castigliano Room (Buld. 5)
A1 Cognitive Informatics Chair: Paolo Soda	B1 Cognitive Science and Arts [S2-1] Chair: Garry Jacobs
On Autonomous Systems: From Reflexive, Imperative and Adaptive Intelligence to Autonomous and Cognitive Intelligence (208) <i>Yingxu Wang, Kostas N. Plataniotis, Sam Kwong, Henry Leung, Svetlana Yanushkevich, Fakhri Karray, Ming Hou, Newton Howard, Rodolfo A. Fiorini, Paolo Soda, Edward Tunstel, Jianmin Wang, and Shushma Patel</i>	From Autonomous Systems to Symbiotic System Science (4) <i>Rodolfo Fiorini</i>
Towards Evolving Symbiotic Cognitive Education Based on Digital Twins (118) <i>Witold Kinsner and Roberto Saracco</i>	Discovery and Innovation in Science and Technology: Interdisciplinary and Transdisciplinary Approaches (126) <i>Marcel Van de Voorde and Michael E. Fitzpatrick</i>
A Machine Learning Radar Scheduling Method Based on the EST Algorithm (29) <i>Zhen Qu, Zhen Ding and Peter Moo</i>	The Alternate Education for the 21st Century (10) <i>Roy Saurabh, Nandini Chatterjee and Anantha Duraiappah</i>
11:30 - 12:30, Parallel Sessions	
A2 Cognitive Computing Chair: Newton Howard	B2 Cognitive Science and Arts [S2-2] Chair: Rodolfo A. Fiorini
A Perspective on Leadership in Cognitive Computing and its Social Consequences (16) <i>Garry Jacobs</i>	The Science and Art of Decision Making (103) <i>Elif Cepni</i>
Intrusion Detection System using Convolutional Neuronal Networks: A Cognitive Computing Approach for Anomaly Detection based on Deep Learning (30) <i>Lalin Heng and Thomas Weise</i>	Educating for the Future in the Age of Obsolescence (32) <i>Piero Dominici</i>
RTPA-based Software Generation by AI Programming (129) <i>Yingxu Wang and James Y. Xu</i>	Human-Centered Symbiotic System Science (217) <i>Rodolfo A. Fiorini</i>
12:30 - 14:00 Lunch Magna Room Balcony (Buld. 1)	
14:00 - 14:40 Keynote 2 The Future of the Brain and Beyond Prof. Newton Howard, University of Oxford, UK Chair: Paolo Soda (De Donato Room)	



14:40 - 16:00, Parallel Sessions

A3 Cognitive Robotics Chair: Edward Tunstel		B3 Cognitive Computational Intelligence [S1] Chair: Jun Peng	
Dynamic Path Optimization for Robot Route Planning (180) <i>Ying Huang, Yingxu Wang and Omar Zatarain</i>		S-boxes Construction Based on Quantum Chaos and PWLCM Chaotic Mapping (223) <i>Jun Peng, Shaoning Pang, Du Zhang, Shangzhu Jin, Lixiao Feng and Zuojin Li</i>	
Learning Target Reaching Motions with a Robotic Arm using Brain-inspired Dopamine Modulated STDP (109) <i>J.C.V. Tieck, Pascal Becker, Jacques Kaiser, Igor Peric, Mahmoud Akl, Daniel Reichard, Arne Roennau and Rüdiger Dillman</i>		Fractability Evaluation in Deep Shale Reservoirs based on a Fuzzy Grey Correlation Analysis Method (34) <i>Hong Liu, Yuanyuan Huang, Xiaoyu Zhang, Zujie Bie, Jiayue Gu and Long He</i>	
Ample Probability in Cognition (182) <i>Mark Burgin and Paolo Rocchi</i>		The Analysis of Traffic Energy Infrastructures Service Efficiency based on Different Information Scenarios with Cellular Automata Simulation (8) <i>Qiguang Lyu, Maozeng Xu, Guangcan Xu, Yong Liu and Xiang Zhou</i>	
Towards Automatic Recognition of Sounds Observed in Daily Living Activity (219) <i>Arslan Shaukat, Ammar Younis, Muhammad Usman Akram, Muhammad Mohsin and Zartasha Mustansar</i>		A Risk Assessment Model of Stampede Accidents in Primary and Secondary School Teaching Buildings Based on Bayesian Network <i>Rui Zou, Yu Zou, Bihai Zou and Xin Liu (121)</i>	
16:00 – 16:20		Coffee Break	
		De Donato Room Atrium (Buld. 3)	
16:20 – 17:40			
A4 Brain-inspired Systems Chair: Witold Kinsner		B4 Cognitive Science and Arts [S2-3] Chair: Rodolfo A. Fiorini	
A Robust Variance Complexity Measure for Stochastic Self-Affine Processes (123) <i>Witold Kinsner</i>		AI and Us: Existential Risk or Transformational Tool? (112) <i>Neantro Saavedra-Rivano</i>	
Geometrical Vitality of Human Head model to Calculate Intra Cranial Pressure for Pro-cognitive Computing (218) <i>Zartasha Mustansar, Maria Rathore, Arslan Shaukat, Salma Sherbaz, Nabisha Farooq and Faizan Nadeem</i>		Digital for Life? Blind Spots of AI and its Reframing for Desirable Futures (113) <i>Carlos Alvarez-Pereira</i>	
Study of Motor Imagery for Multiclass Brain System Interface with a Special Focus in the Same Limb Movement (107) <i>Mohit Patil, Nikhil Garg, Lizy Kanungo and Veeky Baths</i>		Educational Environments for Collaboration and Innovation (220) <i>Ullica Segerstrale</i>	
A Brain Inspired View of Life: The Scientific, Social and Cultural Implications of Interconnectivity and Complexity (115) <i>Turker Kilic</i>		How Should Higher Education Respond to 21st Century Challenges? Some Practical Comments (117) <i>Zbigniew Bochniarz</i>	

Wednesday, July 24, 2019

08:30 - 09:00

Registration (Magna Room Balcony, Buld. 1)

09:00 - 09:40

Keynote 3

WhiteMech: White-Box Self-Programming Mechanisms

Prof. Giuseppe de Giacomo, University of Rome

Chair: **Rodolfo Fiorini** (Magna Room)

09:45 - 10:45, Parallel Sessions

Session A: Magna Room (Buld. 1)		Session B: Castigliano Room (Buld. 5)	
A5 Cognitive Vehicles and Self-Driving Chair: Hironori Hiraishi		B5 WAAS Panel: AI and Man-Machine Symbiotic Societies Chair: Garry Jacobs	
Experience-based Analysis and Modeling for Cognitive Vehicle Data (3) <i>Hironori Hiraishi</i>		Impact of AI and Cognitive Computing on Sustainable Development (<i>Peta Milan</i>) Science, Technology & Social Responsibility (<i>Tibor Toth</i>)	
Towards Computationally-Efficient Cognitive Sensor Systems for Autonomous Vehicles (11) <i>Shashanka M R, Sumeet Kumar, Amir Zjajo and René van Leuken</i>		Social Process of Technology Evolution (<i>Winston Nagan</i>) Art of Decision-making (<i>Elif Cepni</i>)	
Sequence Learning for Images Recognition in Videos with Differential Neural Networks (56) <i>Yingxu Wang, Omar Zatarain and Tony Tsai</i>		Education for Innovation & Creativity (<i>Mila Popovich</i>) Transdisciplinary Education (<i>Marcel van de Voorde</i>)	



10:45 - 11:00		Coffee Break	Magna Room Balcony (Buld. 1)
11:00 -12:20, Parallel Sessions			
A6 Cognitive Machine Learning Chair: Newton Howard		B6 Cognitive Evolutionary Computation [S3] Chair: Kangshun Li & Wei Li	
Sparse Spatiotemporal Feature Learning for Pipeline Anomaly Detection (130) <i>King Ma and Henry Leung</i>		Using Distance Landscape Strategy for RGV Dynamic Scheduling Problem (39) <i>Wei Li, Ke Li, Xiang Meng, Feng Wang, Yan Chen and Kangshun Li</i>	
Broad Autoencoder Features Learning for Pattern Classification Problems (24) <i>Ting Wang, Wendi Li, Jinde Li, Wing Ng and Sam Kwong</i>		A High Resolution ADC Model Combined Pipeline and Sigma -Delta Oversampling Architecture (15) <i>Wei Ding, Tao Wu, Chengwang Liao and Jing Wang</i>	
Reinforcement Learning using Kalman Filters (23) <i>Kei Takahata and Takao Miura</i>		Differential Privacy for Context-Aware Recommender Systems (33) <i>Shuxin Yang, Kaili Zhu and Wen Liang</i>	
Learning Dynamics of Cognitive Parallel Processing based on a Collective Evaluation (17) <i>Oussama Sabri and Alexandre Muzy</i>		Multi-objective Optimization of Dynamic Responses for a Rail Freight Wagon using Regression Models (128) <i>Manish Pandey, Rituparna Datta, Rajarshi Dey and Bishakh Bhattacharya</i>	
12:20 - 13:30		Lunch	Magna Room Balcony (Buld. 1)
13:30 - 14:15	Keynote 4 Machine Learning based Video Coding using Data-driven Techniques and Advanced Models Prof. Sam Kwong, City University, Hong Kong Chair: Garry Jacobs (Magna Room)		
14:20 - 15:40, Parallel Sessions			
A7 Brain Informatics and Cognition Chair: Henry Leung		B7 Cognitive Systems (I) Chair: Sam Kwong	
Kalman Filter-Based Noise Reduction Framework for Posture Estimation using Depth Sensor (38) <i>Ferdous Ahmed, A S M Hossain Bari, Brandon Sieu, Javad Sadeghi, Jeffrey Scholten and Marina L. Gavrilova</i>		Dual Denoising Autoencoder Feature Learning for Cancer Diagnosis (25) <i>Yuqing Gao, Wing Ng, Ting Wang and Sam Kwong</i>	
Cognitive Attention in Autism using Virtual Reality Learning Tool (21) <i>Vidhusha S, Divya B, Kavitha A, Viswath Narayanan R and Yaamini D.</i>		Awareness of Crime-related Information and Concealed Information Detection Method (105) <i>Qi Liu, Hong-Guang Liu and Lei Zhang</i>	
Person Identification System in a Platform for Enabling Interaction with Individuals Affected by Profound & Multiple Learning Disabilities (35) <i>Carmen Campomanes-Alvarez, B. Rosario Campomanes-Alvarez and Pelayo Quirós</i>		An Effective Approach for Selecting Cluster Centroids for the k-means Algorithm using IABC Approach (22) Nagaraju Devarakonda and M Rao Batchanaboyina	
Multi-Scale Point Pillars 3D Object Detection Network (110) <i>Hang Ya and Guiming Luo</i>		Cognitive Hybrid PSO/SA Combinatorial Optimization (214) <i>Kenneth Brezinski and Ken Ferens</i>	
15:40 - 16:00		Coffee Break	Magna Room Balcony (Buld. 1)
16:00 - 17:00, Parallel Sessions			
A8 Cognitive Linguistics and Semantics Chair: Runhe Huang		B8 Cognitive Systems (II) Chair: Marina Gavrilova	
Using First- and Third-person POV to Bridge Cultural Misunderstandings in Cognitive Learning System of Different Cultural Communication in Simulated Crowd (19) <i>Sutasinee Thovuttikul, Yoshimasa Ohmoto and Toyooki Nishida</i>		Early Experience in Forecasting Blood Glucose Levels using a Delayed and Auto-Regressive Jump Neural Network (132) <i>Federico D'Antoni, Mario Merone, Vincenzo Piemonte, Paolo Pozzilli, Giulio Iannello and Paolo Soda</i>	
Computational Cognitive-Semantic based Semantic Learning, Representation and Growth: A Perspective (14) <i>Ismael Ali and Austin Melton</i>		Thermal Tactile Experiment Device Based on Fuzzy PID Controller and Perception Experiments (122) <i>Junjie Bai, Jun Peng, Xue Zhang, Xiuyan Zhang, Kan Luo, Jianxin Li, Jing Huang and Zuojin Li</i>	
Personalized Group of Readers' Emotion Traits Modeling based on Sentimental Analysis of Novels (213) <i>Yuya Hatakeyama, Runhe Huang, Bowen Du, Neil Yen and Haiquan Wang</i>		Predicting Link Sign in Online Social Networks based on Social Psychology Theory and Machine Learning Techniques (222) <i>Sanjay Kumar, Rohit Beniwal, Sudhanshu Singh and Vipul Gupta</i>	
19:00 - 21:00		Gala banquet and Awards	Sforza Castle (Castello Sforzesco)



Thursday, July 25, 2019

08:30 - 09:00 Registration (Magna Room Balcony, Buld. 1)	
09:00 - 09:40	Keynote 5 On the Emergence of Abstract Sciences and Breakthroughs in Machine Knowledge Learning Prof. Yingxu Wang, Univ. of Calgary, Canada Chair: Rodolfo A. Fiorini (Magna Room)
09:45 - 10:45, Parallel Sessions	
Session A: Magna Room (Buld. 1)	Session B: Castigliano Room (Buld. 5)
A9 Cognitive Computer Vision Chair: Yingxu Wang	B9 Cognitive Systems (III) Chair: Nagaraju Devarakonda
Visualizing the Temporal Similarity Between Clusters of Dynamic Graphs (44) <i>Yunzhe Wang, George Baciu and Chenhui Li</i>	Measuring and Controlling Cognitive Process of Visual Attention in Forest Fire Monitoring System (9) <i>Ljiljana Šerić, Damir Krstinić and Pero Bogunović</i>
Objects Detection and Recognition in Videos for Sequence Learning (98) <i>Yingxu Wang, Tony Tsai and Omar Zatarain</i>	Unique Dragonfly Optimization Algorithm for Harvesting and Clustering the Key Features (125) <i>Nagaraju Devarakonda, Sarvani Anandarao and Raviteja Kamarajugadda</i>
Image Restoration Based on Structure and Texture Decomposition (13) <i>Qiong Zhang, Minfen Shen and Bin Li</i>	Challenges to New Economic Theory: Climate Change, the Fourth Industrial Revolution, Technology, and Global Values (224) <i>Winston Nagan and Samantha Manausa</i>
10:45 - 11:00 Coffee Break Magna Room Balcony (Buld. 1)	
11:00 - 12:20, Parallel Sessions	
A10 Big Data Cognition and Analysis Chair: Rodolfo A. Fiorini	B10 Cognitive Systems (IV) Chair: George Baciu
Developing Concept Enriched Models for Processing Big Data Within the Medical Domain (1) <i>Akhil Gudivada and Nasseh Tabrizi</i>	Multiscale Point Cloud Optimization for SFM Reconstruction (104) <i>Yushi Li and George Baciu</i>
Reliability Analysis of Hydrogen Bubble Defects in Gas Pipeline Based on Big Data (227) <i>Qimin Zhang and Ning Chen</i>	An Optimized Model Checking Parallel Algorithm Based on CUDA (102) <i>Chaoqun Chu, Guiming Luo and Mingyang Zhang</i>
Web Insights for National Security: Analysing Participative Online Activity to Interpret Crises (101) <i>Pedro Cardenas, Georgios Theodoropoulos and Boguslaw Obara</i>	Artificial Life Intelligence for Individual and Societal Accomplishment (20) <i>Janani Ramanathan and Mila Popovic</i>
Global Challenge Governance: Time for Big Modelling? (37) <i>Tibor Toth, Georgios Theodoropoulos, Samuel Boland, Ibad Kureshi and Adam Ghandar</i>	Phrase Structures and Message Frames for Generation of Cognitive Messages (108) <i>Vedika Parvez</i>
12:20 - 14:00 Lunch Magna Room Balcony	
14:00 - 14:40	Keynote 6 Arbitrary Multiscale Explainable Decision-Making for Symbiotic Autonomous Systems Prof. Rodolfo A. Fiorini, Politecnico di Milano University, Italy Chair: Garry Jacobs (Magna Room)
14:40 - 16:00 Plenary Session Magna Room (Buld. 1)	
Cognitive Machine Learning, Brain-Inspired Systems and Cognitive Robotics Chair: Prof. Yingxu Wang Distinguished Panelists Rodolfo Fiorini, Marina Gavrilova, Ning Ge, Giuseppe de Giacomo, Newton Howard, Runhe Hwang, Garry Jacobs, Witold Kinsner, Sam Kwong, Henry Leung, Shushma Patel, Jun Peng, Devarakonda N. Raju, Paolo Soda, Edward Tunstel, Du Zhang	
16:00 - 16:20 Welcome to IEEE ICCI*CC'20, Tsinghua University, Beijing, China Magna Room Prof. Ning Ge and Xiaoming Tao	