BRIEF CURRICULUM VITAE AND STUDIORUM[1]
PROF.CESARE ALIPPI

EDUCATION AND ACADEMIC POSITION

Cesare Alippi was born in Lecco (LC) on March the 1st 1966.

1985-1990 M.Eng *Summa cum Laude*, Electrical Engineering, Politecnico di Milano, Milan, Italy.

1990 - 1992: *Research Fellow*, Dep. Computer Science, University College London, London, UK.

1993: *Honorary Researcher*, Dep. Computer Science, University College London, London, UK.

1991-1995 *Ph.D* in Computer and Control Engineering, Politecnico di Milano, Milan, Italy.

April - July 1994: *Visiting Scholar*, Department of Brain and Cognitive Sciences, Massachussetts Institute of Technology, USA

1996 - 1998: *Research Scientist*, Italian National Research Council, Italy.

1998 - 2002: *Associate Professor*, Dep. Elettronica e Informazione, Politecnico di Milano, Italy.

2002 - : *Full Professor* in Information Processing Systems, Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy.

2010: *Frédéric Joliot-Curie Fellowship*, École Supérieure de Physique et de Chimie Industrielles, Paris, France

July 2012 – June 2013: *Research collaborator*, Universita' Svizzera Italiana, Lugano, Switzerland

July-September 2012: *Visiting Professorhip for Senior International Scientists,* Chinese Academy of Sciences, China

April-October 2013: *Visiting Professorship for Senior International Scientists,* Chinese Academy of Sciences, China

February 2014: *Short Term Visit Professor*, Institute for Infocomm Research (I²R), A*STAR, Singapore

2014: *Lecturer*, Università Svizzera italiana, Lugano, Switzerland

2016 -: *Full Professor in Cyber-physical and embedded systems*, Università Svizzera italiana, Switzerland

April 2016- March 2019: *Visiting Professor,* Kobe University, Japan

June 2017-: *Visiting Professor,* Guandong University of Technology, Guangzhou, China

December 2018-: *Consultant Professor*, Northwestern Polytechnic of Xi'An, Xi'An, China

January 2021 –: *Prorector for internationalization*, Universita' Svizzera Italiana, Lugano, Switzerland

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[1] For further details please refer to Prof.Alippi's web page http://home.dei.polimi.it/alippi/

RESEARCH ACTIVITY

Critical infrastructures, distributed sensor/actuators systems, social networks and public protection applications are examples of systems characterized by high complexity and production of big and uncertain data. As such, solutions designed to address specific applications require sophisticated mechanisms to grant data handling and process understanding, robustness and resilience abilities, capacity to detect changes in nonstationary and adapt to concept drift, self-awareness to diagnose a fault and self-healing mechanisms to repair it as well as support remote controllability and reprogrammability of the solution.
Moreover, we neither can further accept strong hypotheses that make the mathematics amenable at the cost of loss in effectiveness and applicability nor decouple the design of an intelligent cyber-physical system from reality and its implementation and deployment.
A multidisciplinary approach is needed at the system/system of systems level requiring the introduction of intelligence and adaptation abilities directly in the design phase of the solution. Here, machine learning and computational intelligence are precious tools, combined with traditional techniques, to address and solve the above aspects yielding credible solutions, transferable to industry.
Machine learning techniques have been constituting the leitmotiv of the study and lead to the design of intelligent systems and smart solutions to not-trivial problems and real-world applications.
My research goes in the above outlined direction by coupling basic research in machine learning with embedded systems so as to deliver a new generation of intelligent systems characterized by self-healing, decision making and adaptation abilities.
Current ongoing research addresses issues related to machine learning in non-stationary and evolving environments and intelligent embedded systems; research is carried out both at academic and industrial level. More in detail,

Adaptive Intelligence in Systems

The current research focuses on the theory, implementation and applications of learning machines embedding adaptation mechanisms and, as such, able to deal with changes in stationarity either affecting the environment or the interaction between sensors and environment. Results and developed methodologies shed light on the structural and functional properties underlying such complex systems as well as address the application performance/constraints trade-off.

Recent efforts have been devoted to investigate nonparametric change detection tests designed to detect concept drift in graph-based datastreams. Suitable graphs embedding on riemannian manifolds, also controlled by means of adversarial learning acting on deep learning architectures, have been investigated. Exploration of Adaptive mechanisms allowing the system to react just in time to the perceived changes, i.e., exactly when it is needed, are also object of the research with a specific focus on graph representations and recurrent neural machines. Results have been applied to several applications, e.g., explosive and drug detections from X rays imagery, molecular explosive detections, photovoltaic maximum-power-point-tracker energy harvesting, laser welding and cutting, quality analysis applications.

Intelligence in Embedded Systems

The research addresses methodological and application-related aspects of Intelligent cyber-physical embedded systems, i.e., embedded systems with sensors and actuators executing computational intelligence algorithms to deal with uncertainty and learn from incoming sensor data. The class of

embedded systems known in the literature as Wireless Sensor Networks, Internet of Things, Smart grids, passive RFId-based and hybrid systems are object of the study. More specifically, aspects related to energy harvesting and storage, energy management (energy-aware routing protocols, unit management, adaptive sampling, dynamic data accuracy acquisitions) and integration of hybrid wired/wireless monitoring systems are envisaged. Particular attention is devoted to credible applications designed and deployed to live in harsh environments with intelligent and decision making abilities. A sophisticated automatic, adaptive, sustainable and reliable wireless monitoring system for marine environment has been deployed in Queensland, AUS, November 2007 and an advanced solution is under deployment at the Fiji Islands (2014-2015). Other applications refer to intelligent embedded systems for rockfall collapse where both traditional and novel sensor are considered. Several top-world still-alive deployments differentiating in the sensor platforms and considered technology are still active and spread out between Italy and Switzerland to monitor catastrophic events as those induced by rockfalls and land slides. Rockfall monitoring: S.Martino Mountain, April 2010 (I); Torrioni di Rialba, July 2010 (I); Val Canaria, Canton Ticino, August 2011 (CH); Gallivaggio, July 2012 (I). Landslide monitoring: Torrioni di Rialba, July 2011(I), Premana, August 2012 (I), Val Canaria, Canton Ticino, September 2012 (CH). Aspects related to intelligent power management, remote units reconfigurability, remote code upload, data security and effective data storage, aggregation and visualization are object of the research.

Application-level analysis, synthesis and diagnosis of embedded systems

The ongoing research addresses application level properties of the computational flow associated with an embedded system and its relationships with low level design aspects. The developed methodologies and theories for analysis, synthesis and diagnosis, based on the theory of learning and randomized algorithms approaches, allow us to fully characterize the nature of the computation with an acceptable complexity. Such information can be used to measure the robustness/sensitivity of the application (analysis phase) in the large, provide design guidelines (synthesis phase) and detect, identify and isolate faults and malfunctioning in embedded systems (diagnosis phase). A theory about probably approximated correct computation, i.e., a theoretical framework based on machine learning characterizing performances of embedded systems working within a perturbed environment has been developed and is being assessed.

AWARDS AND RECOGNITIONS

- 2018 IEEE CIS *Outstanding Computational Intelligence Magazine Award* for the paper *Adaptive Strategies for Learning in Nonstationary Environments: a Survey*, by G. Ditzler, M. Roveri, C. Alippi, R. Polikar, IEEE Computational Intelligence Magazine, vol. 10, no. 4, pp. 12-25, 2015
- 2016 International Neural Network Society *Gabor award*, recognizing achievements in engineering and applications of neural networks
- 2016 IEEE CIS *Outstanding Transactions on Neural Networks and Learning Systems Paper award* for the paper titled "Just-in-Time Classifiers for Recurrent Concepts" by C.Alippi, G.Boracchi, M.Roveri, IEEE TNLS, 2013.
- *Distinguished Lecturer* of the IEEE Computational Intelligence Society, 2014-2016 term.
- *IBM Faculty Award,* 2013
- IEEE Fellow, "*for contributions to robustness and application-level synthesis of embedded information processing systems*", 2006

- 2003 IEEE Instrumentation and Measurement Society *Outstanding Young Engineer Award "In recognition of his leadership in the fields of digital architectural design and neural networks for industrial applications."*
- IEEE Senior Member, "*for contributions to robustness and application-level synthesis of embedded information processing systems*", 1999

Plaques

- *Plaque of appreciation* from the IEEE Computational Intelligence Society *in recognition of his leadership and service as General Program Chair,* 2014 IEEE Symposium Series on Computational Intelligence SSCI 2014, Orlando, USA, 2014.
- *Plaque of appreciation* from the IEEE Computational Intelligence Society *in recognition of his leadership and service as Program Chair,* 2014 IEEE International Joint Conference on Neural Networks IJCNN 2014, Beijing, China, 2014.
- *Plaque of appreciation* from the IEEE Computational Intelligence Society *in recognition of his leadership and service as General Chair,* 2012 IEEE International Joint Conference on Neural Networks IJCNN 2012, Brisbane, Australia, 2012.
- *Outstanding service award Plaque* as Program co-Chair of IEEE IJCNN11, San Jose', USA, 2011.

Certificates of appreciation

- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the IEEE CIS Awards Committee*, 2020.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Administrative Committee member*, 2019.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the IEEE CIS Awards Committee*, 2019.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the Summer Schools committee*, 2017.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Vice President for Education, IEEE CIS Executive Committee*, 2015-2016.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Vice President for Education, IEEE CIS Executive Committee*, 2013-2014.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Associate Editor of the IEEE Transactions on Neural Networks*, 2004-2012.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the IEEE CIS Awards Committee*, 2012.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the IEEE CIS Graduate Student research grant sub-committee*, 2011.
- Certificate of appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Associate Editor of the IEEE Neural Networks Transactions*, 2010.

- Certificate of Appreciation from IEEE for dedication and service to the IEEE Computational Intelligence Society as *Chair of the IEEE Neural Networks Technical Committee*, 2009.

INVOLVEMENT IN NATIONAL ORGANIZATIONS

- Membro comitato direttivo del Consorzio Interuniversitario Nazionale per l'Informatica come rappresentante del Politecnico di Milano, 2018-2021
  Membro dello steering committee MIUR-CNR per il programma di dottorati nazionali nel settore dell'Intelligenza Artificiale
- Membro del gruppo di consulenza e coordinamento, del dipartimento per la formazione superiore e la ricerca, per il nuovo piano nazionale ella ricerca (PNR) per le proposte e le strategie nazionali e per Horizon Europe 2021-27 del MIUR per "Intelligenza artificiale, cybersecurity, e robotica".
- Membro comitato direttivo del Consorzio Interuniversitario Nazionale per l'Informatica come rappresentante del Politecnico di Milano, 2016-2018

INVOLVEMENT IN INTERNATIONAL ORGANIZATIONS

- Maria de Maeztu Advisory Board member, Institut de Robotica i Informatica Industrial, Universidad Politecnica de Catalunya; Barcelona, Spain, 2019-2021
- *Member* of the Administrative Committee (AdCom) of the IEEE Computational Intelligence Society (CIS), 2020-2022
- *Member* of the Administrative Committee (AdCom) of the IEEE Computational Intelligence Society (CIS), 2017-2019
- *Member* of the Board of Governors of the International Neural Network Society (INNS), 2015-2021
- *Member* of the Board of the executive Committee of the European Neural Network Society (ENNS), 2010-2019
- *Founding Member* of the Società Accademici Italiani in Svizzera, 2018-
- *Vice-President for Education* of the IEEE Computational Intelligence Society (CIS), 2015-2016
- *Vice-President for Education* of the IEEE Computational Intelligence Society (CIS), 2013-2014
- *Member* of the Administrative Committee (AdCom) of the IEEE Computational Intelligence Society (CIS), 2012-2014
- *Chair* of the IEEE Computational Intelligence Society (CIS) Awards Committee (2019)
- *Chair* of the IEEE Computational Intelligence Society (CIS) Awards Committee (2012)
- *Co-Editor in Chief, (*Chinese Association for Artificial Intelligence*) CAAI Transactions on Intelligence Technology,* Elsevier (2016-)
- *Advisory Board member,* (Springer) Evolving Systems Journal (2020-)
- *Advisory Board member*, International Journal on Intelligent Information Science and Systems, Spinger (2016-)
- Advisory Board member, Hybrid Intelligence, Inderscience enterprise (2019-)
- *Member* of the IEEE Frank Ronsenblatt award committee (2011-2013)
- *Associate Editor*, Neural Networks, (2016-2017)
- *Associate Editor*, IEEE Computational Intelligence Magazine (2010-2014)

- *Associate Editor*, IEEE-Transactions on Neural Networks (2004-2012)
- *Guest Associate Editor*, IEEE-Transactions Neural Networks & Leaning Systems (2012-13)
- *Associate Editor,* IEEE-Transactions on Instrumentation and Measurements (2003-2010)
- *Associate Editor,* (Springer) Evolving Systems Journal (2014-2019)
- *Associate Editor,* (Springer & Science China) Science China: Information Sciences Journal (2011-)
- *Associate Editor,* IEEE/CAA Journal of Automatica Sinica (JAS)*,* (2014-)
- *Associate Editor,* IEEE Transactions on Emerging Topics in Computational Intelligence, (2016-2017)
- *Associate Editor,* (Online) International *Journal* on Smart Sensing and Intelligent Systems (2008-)
- *Chair* of the IEEE Technical Committee on Neural Networks of the IEEE Computational Intelligence Society (2008-2010)
- *Co-Chair* of the Technical Committee TC-22 Intelligent Measurement Systems of the IEEE Instrumentation and Measurement Society (2004-2009)
- *Chair* of the IEEE Computational Intelligence Society (CIS) Research grant sub-committee (2011)
- *Member* of the sub-committee of the IEEE Computational Intelligence Society for the outstanding Early Career Award (2011)
- *Member* of the IEEE Computational Intelligence Society Finance Committee (2009-2013)
- *Member* of the IEEE Technical Committee on Neural Networks of the IEEE Computational Intelligence Society (2011-2013)
- *Member* of the IEEE Technical Committee on Intelligent Systems and Applications of the IEEE Computational Intelligence Society (20109-2013)
- *Member* of the IEEE Computational Intelligence Society awards committee (2009-2010)
- *Member* of the CIS Students grant 2009
- *Vice-Chair* of the IEEE Technical Committee on Neural Networks of the IEEE Computational Intelligence Society (2007-2008)
- *Vice-Chair* of the EU COST Action IC0806 –Intelligent Monitoring, Control and Security of Critical Infrastructure Systems (since 2009-2013)
- *Voting representative* of the IEEE I&M Society in the Administrative Committee of the IEEE Neural Networks Society 2003-2004

Conference activity (Only recent and relevant)

- *General Chair*: ICIC2016 (Lanzhou, China); IEEE ICIST 2015 (Changsha, China), IEEE SSCI15-IES (Orlando, USA); ICICIP 2013 (Beijing, China); IEEE International Joint Conference on Neural networks 2012 (one of the major events in the neural networks field, Brisbane, AUS); IEEE HAVE 2009 (Lecco, Italy); IEEE ROSE 2009 (Lecco, Italy); IEEE CIMSA 2009 (Hong Kong, HK);
- *General Program Chair*: IEEE SSCI 2014 (Orlando, USA)
- *Program Chair*: IJCNN 2014 (one of the major events in the field in the Neural Networks field, Beijing, China), Beijing; ISNN 2011 (Guilin, China), ICANN 2009 (the major European Neural Networks event, Limassol, Cyprus);
- *Program Co-Chair*: IEEE ICDS2020 (Fez, Morocco); IEEE IJCNN 2011 (one of the major events in the neural networks field, San Jose', USA); IEEE IMS 2005 (Orlando, USA);

- *Regional chair*. WCICA 2016 (Guilin, China), ICONIP 2017 (Guangzhou, China)
- *Conflict of Interest paper Chair*: World congress on Computational Intelligence 2016 (Vancouver, Canada)
- *Plenary Chair*: IEEE WCCI2020 (Glasgow, UK), IJCNN17 (Anchorage, USA), ISNN 2012 (Shenyang, China)
- *Special Session Chair*, IEEE WCCI2018 (Rio de Janeiro, Brazil)
- *Keynotes/plenaries*: HDS20 (Shiga, Japan), IEEE ICDS20 (Fez, Morocco), IEEE DDCLS2019 (Dali, China), ICSD2019 (Marrackech, Morocco), KIOS 19 (distinguished lecture at the center, Nicosia, Cipro), AIAIM2019 (Doha, Qatar), ICONIP18 (Invited talk, Siem Reap, Cambodia), ICACI17 (Doha, Qatar), ICAISC17 (Zakopane, Poland), LA-CCI16 (Cartagena, Colombia), ICRCICN16 (Kolkata, India), WCICA16 (Guilin, China), IJCNN15 (invited talk, Killarney, Ireland); WIRN15 (Vietri, Italy); IJCCI14 (Rome, Italy); IDEAL14 (Salamanca, Spain); ICATET14 (Jaipur, India); BICS13 (Beijing, China), ISNN13 (Dalian, China), M2M 2012 (Taipei, Taiwan), IWACI 2010 (Suzhou, China); IEEE ICST 2009 (Tainan, Taiwan); IEEE ROSE 2007 (Ottawa, Canada);
- *Steering or Advisory board Committee*: ISNN 2010; IEEE CIMSA 2005-2012, IEEE CIVEMSA 20013-, FANCO15, IEEE WCI15 (Kanpur, India), IEEE ICRCICN 2016 (Kolkata, India), IEEE ICCI-2017 (Kanpur, India), ICSD2017 (Meknes, Marocco), IEEE ICIET-2017 (Jaipur, India), ICRITETR-(Jaipur, India), ICANN18 (Rhodes, Greece), IEEE ICRCICN 2018 (Kolkata, India), ISSIP 2018 (Kolkata, India), AIAIM2019 (Doha, Qatar), ICRTIEST 2019 (Jaipur, India), ISCMI20 (Stockholm, Sweden)

- *Summit Chair,* IEEE Smart World Congress (San Francisco, USA), 2017
- *Regional chair*: WCICA 2016 (Guilin, China)
- *Program Committee member*: tens of events

Alippi has organised several special sessions and workshops in IEEE international conferences (e.g., IEEE ISCAS, IEEE-INNS IJCNN, IEEE IMTC, IEEE SSCI)

SOME FIGURES

MONOGRAPHS: 1 (SINGLE AUTHOR; ENGLISH AND CHINESE LANGUAGES)
PATENTS: 7+1 REGISTERED
INTERNATIONAL JOURNALS: 74
NATURE: 2 (SCIENTIFIC REPORTS)
IEEE TRANSACTIONS: 47 (5 AS A SINGLE AUTHOR)
TNN(LS) 15, TIM 8, TCAS 5, TSMC 4, TCYB 2, TCAD 2, TC 2, TPAMI 1, TVLS 1, TCPM 1, TNS 1, SEN 1, SYS1, TMC 1, TETCI 1, TSP 1)
ACM TRANSACTIONS: 1 (TOSN 1)
IEEE MAGAZINES: 10
(I&M 5; CIM 2; COMPUTERS 2, COMMUNICATIONS 1)
NEURAL NETWORKS: 1
NEUROCOMPUTING: 2
OTHERS: 9
EDITED BOOKS AND BOOK CHAPTERS
EDITED BOOKS: 7
BOOK CHAPTERS: 13
GUEST EDITOR, SPECIAL ISSUES 5
(IEEE TIM, NEURAL NETWORKS, IEEE TNNLS, NEUROCOMPUTING, COMPUTATIONAL INTELLIGENCE MAGAZINE)

CONFERENCE/WORKSHOP PAPERS: 130+ INCLUDING 2 ICML PAPERS, 1 ICLR, 2 NEURIPS, ICML WORKSHOPS + OTHER TOP CONFERENCES IN OTHER AREAS
JOURNAL PAPERS UNDER REVIEW: 2
FUNDING: ALIPPI COORDINATED PROJECTS FOR MORE THAN 5.000.000 EUROS

TEACHING ACTIVITY

Alippi has taught tens of courses in Computer Sciences at Politecnico di Milano, e.g., "Fundamentals of Computer Sciences", "Information Processing systems", "Intelligent Embedded Systems" both at undergraduated and graduated levels. At Universita' della Svizzera italiana, Alippi has taught the courses "Optimizing embedded applications", "Cyber-physical systems-Intelligence".

SELECTED PUBLICATIONS

MONOGRAPH

C.Alippi, Intelligence for Embedded Systems: a Methodological approach, Springer, 2014, pp. 283 the book has been translated in Chinese in 2020

EDITED BOOKS

R.Kozma, C.Alippi, Y.Choe, F.Morabito, *Artificial Intelligence in the Age of Neural Networks and Brain Computing*, Elsevier, 2018

C.Alippi, M.Polycarpou, Handbook on Computational Intelligence, Part D: Neural Networks, Springer, 2015

D. Liu, C. Alippi, D. Zhao, H. Zhang, Frontiers of Intelligent Control and Information Processing, World Scientific Publishing, Singapore, 2014

Liu, D.; Alippi, C.; Zhao, D.; Hussain, A. (Eds.), *Advances in Brain Inspired Cognitive Systems*, Vol. 7888, 6th International Conference, BICS 2013 Beijing, China, June 9-11, Proceedings, Springer 2013

J.Liu, C.Alippi, B. Bouchon-Meunier, G. W. Greenwood, H. A. Abbass, *Advances in Computational Intelligence,* Vol. 7311, Edited book of the *plenary/invited lectures* delivered at the IEEE World Congress on Computational Intelligence WCCI 2012, Brisbane, Australia, June 2012, Springer 2012

D. Liu, H. Zhang, M. Polycarpou, C. Alippi, and H. He, Editors, *Advances in Neural Networks* - ISNN2011, Berlin: Springer, 2011, 3 Volumes

C.Alippi, M.M. Polycarpou, C.Panayiotou, G.Ellinas, Editors*, Artificial Neural Networks -ICANN 2009*, Springer 2009, 2 Volumes

INTERNATIONAL TOP JOURNALS (co-authored papers)

F.Bianchi, D.Grattarola, L.Livi, C.Alippi, Hierarchical Representation Learning in Graph Neural Networks with Node Decimation Pooling, IEEE TNNLS, accepted December 2020

D.Grattarola, C.Alippi, Graph Neural Networks in TensorFlow and Keras with Spektral, IEEE Computational intelligence magazine, 2020

H.Lin, B.Zhao, D.Liu, C.Alippi, Data-based Fault Tolerant Control for Affine Nonlinear Systems through Particle Swarm Optimized Neural Networks, IEEE/CAA Journal of Automatica Sinica, 2020

B. Zhao, D.Liu, C.Alippi, Sliding Mode Surface-Based Approximate Optimal Control for Uncertain Nonlinear Systems with Asymptotically Stable Critic Structure, IEEE Transactions on Cybernetics, December 2019

D. Zambon, C. Alippi, L. Livi, Change point methods on a sequence of graphs, IEEE Transactions on Signal Processing, Vol.67, No.4, pp. 6327-6341, December 2019 10.1109/TSP.2019.2953596.

P. Verzelli, C. Alippi, Lorenzo Livi, Echo State Networks with Self-Normalizing Activations on the Hyper-Sphere, Nature-Scientific reports, 2019

D. Grattarola, D. Zambon, L.Livi and C. Alippi, Change Detection in Graph Streams by Learning Graph Embeddings on Constant-Curvature Manifolds , IEEE Transactions on Neural Networks and Learning Systems, Vol. 31, No. 6, pp. 1856-1869, June 2020 arXiv:1805.07113, 2019.

D.Grattarola, L.Livi, C.Alippi, Adversarial Autoencoders with Constant-Curvature Latent Manifolds, Applied Soft Computing, 2019.

D.Zambon, C.Alippi, L.Livi, Concept Drift and Anomaly Detection in Graph Streams, IEEE Transactions on Neural Networks and Learning Systems, Vol.29, No. 9, pp. 5592 - 5605, 9 March 2018 DOI 10.1109/TNNLS.2018.2804443

A. Dal Pozzolo, G.Boracchi, O.Caelen, C. Alippi, G.Bontempi, *Credit Card Fraud Detection: a Realistic Modeling and a Novel Learning Strategy*, IEEE Transactions on Neural Networks and Learning Systems, Vol 29. No. 8, August 2018, pp.3784-3797 10.1109/TNNLS.2017.2736643

L.Bu, D.Zhao, C.Alippi, *An Incremental Change Detection Test Based on Density Difference Estimation*, IEEE Transactions on Systems, Man and Cybernetics: Systems, pp 2714 – 2726, Vol 47, No 10, 2017

L.Livi, C. Alippi, *One-class classifiers based on entropic spanning graphs*, IEEE Transactions on Neural Networks and Learning Systems, Vol 28, No 12, pp 2846-2858. 2017

F.M.Bianchi, L.Livi , C.Alippi, R.Jenssen, Multiplex visibility graphs to investigate recurrent neural networks dynamics, Nature-Scientific reports, Vol.7, pp.44037-44049, 2017

C. Alippi, G. Boracchi, M. Roveri, *Hierarchical Change-Detection Tests*, IEEE Transactions on Neural Networks and Learning Systems, Vol. 28, No. 2, pp 246–258, 2017. DOI 10.1109/TNNLS.2015.2512714, 2016, pp.1-13

C.Alippi, S.Ntalampiras, M.Roveri, *Model-free fault detection and isolation in large-scale cyber-physical systems*, IEEE Transactions on Emerging Topics in Computational Intelligence, Vol 1.No1. Feb, 2017, pp. 61-71

C.Alippi, M.Roveri, *The (not) far away path from smart cyber-physical systems: an information-centric framework,* IEEE Computers Magazine, April 2017, pp. 1-9

L.Livi , F.M.Bianchi, C.Alippi, *Determination of the edge of criticality in echo state networks through Fisher information maximization*, IEEE Transactions on Neural Networks and Learning Systems, Vol 29, No. 3, 2017, pp. 707-717

F.M.Bianchi, L.Livi, C.Alippi, *Investigating echo state networks dynamics by means of recurrence analysis*, IEEE Transactions on Neural Networks and Learning Systems, Vo 29, No 2, 2018, pp 427-439

L. Bo, C.Alippi, D.Zhao, A Pdf-free Change Detection Test Based on Density Difference Estimation, IEEE Transactions on Neural Networks and Learning Systems, Vol 29, No 2, 2018, pp 324-334

S.B. Gee, K.C. Tan, C. Alippi, *Solving Multiobjective Optimization Problems in Unknown Dynamic Environments: An Inverse Modeling Approach*, IEEE Transactions on Cybernetics, Vol 47, No 2, 2017, pp. 4223-4234

M. A. Cugueró-Escofet, J. Quevedo, C. Alippi, M. Roveri, V. Puig, D. García, F. Trovò, *Model- vs. data-based approaches applied to fault diagnosis in potable water supply networks*, Journal of Hydroinformatics, 2016

C.Alippi, R.Fantacci, D.Marabissi, M.Roveri, *A Cloud to the Ground: The New Frontier of Intelligent and Autonomous Networks of Things*, IEEE Communications Magazine, Vol.54, No 12, pp. 14-20, December 2016

C. Alippi, M. Bocca, G. Boracchi, N. Patwari, M. Roveri, *RTI Goes Wild: Radio Tomographic Imaging for Outdoor People Detection and Localization*, IEEE Transactions on Mobile Computing, Vol. 15, No.10, 2016, pp. 2585-2598

C. Alippi, G. Boracchi, M. Roveri, *A reprogrammable and intelligent monitoring system for rock collapse forecasting*, IEEE Systems, Vol.10 No.2, 2016. pp.733-744

G. Ditzler, M. Roveri, C. Alippi, R. Polikar, *Adaptive Strategies for Learning in Nonstationary Environments: a Survey*, IEEE Computational Intelligence Magazine, vol. 10, no. 4, pp. 12-25, 2015

C.Alippi. M.Roveri. F.Trovo', *A Self-building and Cluster-based Cognitive Fault Diagnosis System for Sensor Networks*, IEEE Transactions on Neural Networks and Learning Systems, Vol. 25, No.6, pp. 1021-1032, June 2014

C.Alippi, D.Liu, D.Zhao, L.Bu, *Detecting and Reacting to Changes in Sensing Units: the Active Classifier Case*, IEEE Transactions on System, Man, Cybernetics: Systems, Vol. 44, No. 3, pp.353-362, 2014

B.Wang, D.Zhao, C.Alippi, D.Liu, *Dual Heuristic Dynamic Programming for Nonlinear Discrete-Time Uncertain Systems with State Delay*, Neurocomputing, Elsevier, Vol. 134, pp. 222–229, 2014

D. Zhao, Z. Hu, Z. Xiaa, C. Alippi, Y. Zhua, D. Wang, *Full-range Adaptive Cruise Control Based on Supervised Adaptive Dynamic Programming*, Neurocomputing, Elsevier, Volume 125, 11 February 2013, Pages 57-67, ISSN 0925-2312

C.Alippi, S.Ntalampiras, M.Roveri, *A Cognitive Fault Diagnosis System for Distributed Sensor Networks*, IEEE Transactions on Neural Networks and Learning Systems, Vol.24, No.8., pp.1213-1226, August, 2013

C.Alippi, R.Camplani, C.Galperti, A.Marullo, M.Roveri, *A high frequency sampling monitoring system for environmental and structural applications*, ACM Transactions on Sensor Networks, pp.1-32, ACM Transactions on Sensor Networks 9, 4, Article 41, 32 pages, 2013.

C.Alippi, G.Boracchi, M.Roveri, *Ensemble of Change-Point Methods to improve the Change Instant Estimate in Residual Sequences*, Soft Computing Journal, Elsevier, Vol. 17, no. 11, pp.1971-1981, 2013

C.Alippi, G.Boracchi, M.Roveri, *Just-In-Time Classifiers for Recurrent Concepts*, IEEE Transactions on Neural Networks and Learning Systems, Vol.24, No.4., pp.620-634, April, 2013

C.Alippi, G.Boracchi, M.Roveri *A just-in-time adaptive classification system based on the intersection of confidence intervals rule*, Neural Networks Journal, Elsevier, Vol24, pp. 791-800, 2011

C. Alippi, R. Camplani, C. Galperti, M. Roveri, *A robust, adaptive, solar powered WSN framework for aquatic environmental monitoring*, IEEE Sensors Journal, vol.11, no.1, pp.45-55, Jan. 2011

C. Alippi, G. Boracchi, R. Camplani, M. Roveri, *Detecting External Disturbances on Camera Lens in Wireless Multimedia Sensor Networks,* IEEE Transactions On Instrumentation and Measurement, (pp. 2982- 2990), 59. (2010).

C.Alippi, G.Anastasi, M. Di Francesco, M.Roveri: *An Adaptive Sampling Algorithm for Effective Energy Management in Wireless Sensor Networks with Energy-hungry Sensors*, IEEE-Transactions on Instrumentation and Measurement. Vol. 59, Issue 2, Feb. 2010 pp. 335 – 344

C.Alippi, R.Camplani, M.Roveri: *An Adaptive, LLC-based and Hierarchical Power-aware Routing Algorithm*, IEEE-Transactions on Instrumentation and Measurement. Volume: 58 Issue: 9, pp 3347-3357, Sept. 2009

C.Alippi, G.Anastasi, M. Di Francesco, M.Roveri: *Energy Management in Wireless Sensor Networks with Energy-Hungry Sensors*, IEEE-Instrumentation and Measurement magazine, Vol. 2, No. 2, pp 16-23, 2009.

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SPIN-OFF & START UP

Alippi activated one spin off (Sensure) and a Start up (Resen) with his collaborators and postdocs.

- **Sensure Srl**., www.sensure.it/

Target: Quality Analysis and monitoring in industrial processes with machine learning tools

- **Res.En srl**, www.resen.it

Target: Embedded system design for industrial and environmental applications

PATENTS

- A.Basso, M.Galimberti, C.Alippi, G.Boracchi, M.Roveri, Dispositivo e procedimento di rilevazione, Registered 9 June, 2017. MEC4P6IT, Italian validity
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LABORATORIES

Prof. Alippi has created two labs, one on Wireless Embedded Systems (Wemsy) one on RFId Technologies (in collaboration with HP, INTEL, Microsoft and the Management Department of PoliMi). He has also coordinated the PROMETEO Lab on Public Protection technologies (it involves 6 departments of Politecnico di Milano)

- *Wemsy Lab: Wireless Embedded Systems:*

http://www.campuspoint.polimi.it/index.php?option=com_content&view=article&id=96&Itemid=91&lang=it

- *RFId Solution Center*

http://www.rfidsolutioncenter.it/index.php?/Persone.html

FUNDED PROJECTS (last 8 years)

The amount of funds coordinated by Prof.Alippi is more than 5.000.000 euros out of which more than 4.000.000 assigned to him.

Cesare Alippi