

Curriculum Vitae

GIULIANO GROSSI

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Education

- Degree in Computer Science (July 1994). Department of Computer Science - University of Milan. Dissertation: Implementation of a neural network for MAX-2SAT on programmable logic.
- Ph.D. (February 1999). Department of Computer Science - University of Milan. Dissertation: Expectation-Guaranteed Local Search and related Neural and Genetic Heuristics.

Positions hold

- Assistant Professor (since October 2001). Department of Computer Science - University of Milan.
- Post-doc research project (years 1999-2001). Research title: Develop and circuit implementation of non conventional model of computation with application to combinatorial optimization.

Research projects

2019-2021 National project Fondazione Cariplo (N. 2018-0858) "Stairway to elders: bridging space, time and emotions in their social environment for wellbeing", progetto sul bando "Ricerca Sociale sull'invecchiamento: persone, luoghi e relazioni" (Fondazione Cariplo nell'anno 2018), role: participant.

2013-2016 European project FP7-ICT-2013-11: Future Networks. Project title: Network Functions as-a-Service over Virtualised Infrastructures (T-NOVA), project number 619520, (<http://www.t-nova.eu>), role: local scientific coordinator.

2013-2016 National project Futuro in Ricerca (FIRB) program. Project title: Interpreting emotions: a computational tool integrating facial expressions

and biosignals based shape analysis and bayesian networks, Founded by MIUR - Ministero dell'Istruzione dell'Università e della Ricerca, role: participant.

2001-2002 National research project COFIN. Project title: Modelli di calcolo innovativi: metodi sintattici e combinatori, Founded by MIUR - Ministero dell'Istruzione dell'Università e della Ricerca, role: participant.

1998-2001 National project with title Progetto Finalizzato Biotecnologie. Work: Studio e sviluppo di un sistema software per il controllo in tempo reale di esperimenti di misura del calcio intracellulare. Used by Centro di Cito-Farmacologia del CNR - l'ospedale San Raffaele (*Atti del Convegno del Progetto Finalizzato Biotecnologie Genova 2001*), role: participant.

Professional services and editorial activity

- Member of the program committee of GbR 2019, 12-th International Workshop on Graph Based Representations.
- Member of the program committee of the International Conference on Image Analysis and Recognition (ICIAR 2014, ICIAR 2015).
- Member of the program committee of the International Conference on Pattern Recognition Applications and Methods ICPRAM (since 2012).
- Invited talk (seminar) at School of Computer Science and Engineering University of New South Wales, Sydney Australia (summer 2013).
- Referee for the journals: IEEE Transactions on Biomedical Engineering, Neural Networks, Neurocomputing, IEEE Trans. on Biom. Cir. and Sys., Elsevier Jour. of Comb. Opt., Evolutionary Computation Journal (MIT press), Pattern Recognition Lett., Jour. of Discrete Algorithms (Elsevier), Discrete Applied Mathematics.

Awards

- Best Paper Award of the Journal of Applied Clinical Medical Physics (JACMP, 2017) accorded to the paper "Sum signal dosimetry: a new approach for high dose quality assurance with Gafchromic EBT3" by the American Association of Physicists in Medicine (AAPM).
- Best Paper Award at the International Conference on Image Analysis and Processing (ICIAP, 2017) accorded for the paper "Virtual EMG via facial video analysis".

PhD students

2017 Alessandro Petrini (ongoing, co-supervisor)

2017 Alessandro D'Amelio (ongoing, supervisor)

2013 Alessandro Adamo (co-supervisor, "Sparse recovery by nonconvex Lipschitzian mappings)

2006 Massimo Marchi (co-supervisor, "Back and forth between Grid/Web Services and declarative specification")

Teaching activity

- Multimedia information (48h, undergraduate)
- GPU computing (48h, master)
- Methods for signal processing (48h, master)
- Signals and systems (48h, undergraduate)
- Signal processing laboratory (24h, undergraduate)
- Matlab programming (8h, master)
- Java programming laboratory (48h, undergraduate)
- Digital signal processing (48h, undergraduate)
- Stochastic signal processing (48h, master)

Research Interests

- Sparse representation models for solving underdetermined linear systems
- Sparse recovery and regularization methods in signal processing
- Face recognition via sparse decomposition
- Parallel algorithms on GPU-based architectures
- Stochastic models in affective computing

Journal papers

1. Vittorio Cuculo, Alessandro D'amelio, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Robust Single Sample Face Recognition by Sparse Recovery on Learnt Dictionary of Deep-CNN Features". In: *Sensors* 19.1 (2019). DOI: 10.3390/s19010146.
2. G. Boccignone, D. Conte, V. Cuculo, A. D'Amelio, G. Grossi, and R. Lanzarotti. "Deep Construction of an Affective Latent Space via Multimodal Enactment". In: *IEEE Transactions on Cognitive and Developmental Systems* 10.4 (2018), pp. 865–880. DOI: 10.1109/TCDS.2017.2788820.

3. Marco Frasca, Giuliano Grossi, Jessica Gliozzo, Marco Mesiti, Marco Notaro, Paolo Perlasca, Alessandro Petrini, and Giorgio Valentini. "A GPU-based algorithm for fast node label learning in large and unbalanced biomolecular networks". In: *BMC Bioinformatics* 19.10 (2018), p. 353. doi: 10.1186/s12859-018-2301-4.
4. Giuliano Grossi, Pietro Paglierani, Federico Pedersini, and Alessandro Petrini. "Enhanced multicore-manycore interaction in high-performance video encoding". In: *Journal of Real-Time Image Processing* (2018), pp. 1–16. doi: 10.1007/s11554-018-0834-4.
5. Alessandro Adamo, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Sparse decomposition by iterating Lipschitzian-type mappings". In: *Theoretical Computer Science* 664 (2017), pp. 12–28. doi: 10.1016/j.tcs.2016.04.025.
6. Davide Cusumano, Maria Luisa Fumagalli, Francesco Ghielmetti, Linda Rossi, Giuliano Grossi, Raffaella Lanzarotti, Laura Fariselli, and Elena De Martin. "Sum signal dosimetry: A new approach for high dose quality assurance with Gafchromic EBT3". In: *Journal of Applied Clinical Medical Physics* (2017). doi: 10.1002/acm2.12045.
7. Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Orthogonal Procrustes Analysis for Dictionary Learning in Sparse Linear Representation". In: *PLOS ONE* 12.1 (2017), pp. 1–16. doi: 10.1371/journal.pone.0169663.
8. Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Robust Face Recognition Providing the Identity and Its Reliability Degree Combining Sparse Representation and Multiple Features". In: *International Journal of Pattern Recognition and Artificial Intelligence* 30.10 (2016), p. 1656007. doi: 10.1142/S0218001416560073.
9. Alessandro Adamo, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "ECG compression retaining the best natural basis k-coefficients via sparse decomposition". In: *Biomed. Signal Proc. and Control* 15 (2015), pp. 11–17. doi: 10.1016/j.bspc.2014.09.002.
10. Alessandro Adamo, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Robust face recognition using sparse representation in LDA space". In: *Machine Vision and Applications* 26.6 (2015), pp. 837–847. doi: 10.1007/s00138-015-0694-x.
11. Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "High-rate compression of ECG signals by an accuracy-driven sparsity model relying on natural basis". In: *Digital Signal Processing* 45 (2015), pp. 96–106. doi: 10.1016/j.dsp.2015.06.006.
12. Giuliano Grossi. "Adaptiveness in Monotone Pseudo-Boolean Optimization and Stochastic Neural Computation". In: *Int. J. Neural Syst.* 19.4 (2009), pp. 241–252. doi: 10.1142/S0129065709001999.

13. Giuliano Grossi, Massimo Marchi, Enrico Pontelli, and Alessandro Provetti. "Experimental Analysis of Graph-based Answer Set Computation over Parallel and Distributed Architectures". In: *J. Log. Comput.* 19.4 (2009), pp. 697–715. doi: 10.1093/logcom/exn036.
14. Giuliano Grossi and Federico Pedersini. "FPGA implementation of a stochastic neural network for monotonic pseudo-Boolean optimization". In: *Neural Networks* 21.6 (2008), pp. 872–879. doi: 10.1016/j.neunet.2008.06.018.
15. Sabrina Gaito, Andrea Greppi, and Giuliano Grossi. "Random projections for dimensionality reduction in ICA". In: *International Journal of Applied Science, Engineering and Technology* 15 (2006), pp. 154–158.
16. Giuliano Grossi, Massimo Marchi, and Roberto Posenato. "Solving maximum independent set by asynchronous distributed hopfield-type neural networks". In: *RAIRO - Theoretical Informatics and Applications* 40.2 (2006), pp. 371–388. doi: 10.1051/ita:2006012.
17. Alberto Bertoni, Paola Campadelli, and Giuliano Grossi. "A Neural Algorithm for the Maximum Clique Problem: Analysis, Experiments, and Circuit Implementation". In: *Algorithmica* 33.1 (2002), pp. 71–88. doi: 10.1007/s00453-001-0105-8.
18. Alberto Bertoni, Paola Campadelli, and Giuliano Grossi. "An approximation algorithm for the maximum cut problem and its experimental analysis". In: *Discrete Applied Mathematics* 110.1 (2001), pp. 3–12. doi: 10.1016/S0166-218X(00)00299-7.
19. Alberto Bertoni, Paola Campadelli, Marco Carpentieri, and Giuliano Grossi. "A Genetic Model: Analysis and Application to MAXSAT". In: *Evolutionary Computation* 8.3 (2000), pp. 291–309. doi: 10.1162/106365600750078790.
20. Maria A. Alberti, Alberto Bertoni, Paola Campadelli, Giuliano Grossi, and Roberto Posenato. "A Neural Algorithm for MAX-2SAT: Performance Analysis and Circuit Implementation". In: *Neural Networks* 10.3 (1997), pp. 555–560. doi: 10.1016/S0893-6080(96)00065-2.

Conference and workshop papers

1. Giuseppe Boccignone, Matteo Bodini, Vittorio Cuculo, and Giuliano Grossi. "Predictive sampling of facial expression dynamics driven by a latent action space". In: *IEEE 14th Int. Conf. on Signal Image Technology Internet Based Systems (SITIS-2018)*. to appear. 2018.
2. Giuseppe Boccignone, Vittorio Cuculo, Alessandro D'Amelio, Giuliano Grossi, and Raffaella Lanzarotti. "Give Ear to My Face: Modelling Multimodal Attention to Social Interactions". In: *Computer Vision – ECCV 2018 Workshops*. Ed. by Jacques Blanc-Talon, Wilfried Helbert David and Philips, Dan Popescu, and Paul Scheunders. to appear. Springer International Publishing, 2018.

3. Matteo Bodini, Alessandro D'Amelio, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "Single Sample Face Recognition by Sparse Recovery of Deep-Learned LDA Features". In: *Advanced Concepts for Intelligent Vision Systems*. Ed. by Jacques Blanc-Talon, Wilfried Helbert David and Philips, Dan Popescu, and Paul Scheunders. Springer International Publishing, 2018, pp. 297–308. doi: 10.1007/978-3-030-01449-0_25.
4. Giuseppe Boccignone, Vittorio Cuculo, Giuliano Grossi, Raffaella Lanzarotti, and Raffaella Migliaccio. "Virtual EMG via Facial Video Analysis". In: *Image Analysis and Processing (ICIAP 2017)*. Ed. by Sebastiano Battiato, Giovanni Gallo, Raimondo Schettini, and Filippo Stanco. Springer International Publishing, 2017, pp. 197–207. doi: 10.1007/978-3-319-68560-1_18.
5. Claudio Ceruti, Vittorio Cuculo, Alessandro D'Amelio, Giuliano Grossi, and Raffaella Lanzarotti. "Taking the Hidden Route: Deep Mapping of Affect via 3D Neural Networks". In: *New Trends in Image Analysis and Processing (ICIAP 2017)*. Ed. by Sebastiano Battiato, Marco Farinella Giovanni Maria and Leo, and Giovanni Gallo. Springer International Publishing, 2017, pp. 189–196. doi: 10.1007/978-3-319-70742-6_18.
6. Alessandro D'Amelio, Vittorio Cuculo, Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "A Note on Modelling a Somatic Motor Space for Affective Facial Expressions". In: *New Trends in Image Analysis and Processing (ICIAP 2017)*. Ed. by Sebastiano Battiato, Giovanni Maria Farinella, Marco Leo, and Giovanni Gallo. Springer International Publishing, 2017, pp. 181–188. doi: 10.1007/978-3-319-70742-6_17.
7. P. Comi, P. S. Crosta, M. Beccari, P. Paglierani, G. Grossi, F. Pedersini, and A. Petrini. "Hardware-accelerated high-resolution video coding in Virtual Network Functions". In: *2016 European Conference on Networks and Communications (EuCNC 2016)*. 2016, pp. 32–36. doi: 10.1109/EuCNC.2016.7560999.
8. Pietro Paglierani, Giuliano Grossi, Federico Pedersini, and Alessandro Petrini. "GPU-based VP8 encoding: Performance in native and virtualized environments". In: *2016 International Conference on Telecommunications and Multimedia (TEMU 2016)*. 2016, pp. 1–5. doi: 10.1109/TEMU.2016.7551915.
9. Giuliano Grossi, Raffaella Lanzarotti, and Jianyi Lin. "A Selection Module for Large-Scale Face Recognition Systems". In: *Image Analysis and Processing (ICIAP 2015) - 18th International Conference*. 2015, pp. 529–539. doi: 10.1007/978-3-319-23234-8_49.
10. Alessandro Adamo, Giuliano Grossi, and Raffaella Lanzarotti. "Face Recognition in Uncontrolled Conditions Using Sparse Representation and Local Features". In: *Image Analysis and Processing (ICIAP 2013) - 17th International Conference*. 2013, pp. 31–40. doi: 10.1007/978-3-642-41184-7_4.

11. Alessandro Adamo, Giuliano Grossi, and Raffaella Lanzarotti. "Local features and sparse representation for face recognition with partial occlusions". In: *IEEE International Conference on Image Processing (ICIP 2013)*. 2013, pp. 3008–3012. DOI: 10.1109/ICIP.2013.6738619.
12. Alessandro Adamo, Giuliano Grossi, and Raffaella Lanzarotti. "Sparse Representation Based Classification for Face Recognition by k-LiMapS Algorithm". In: *Image and Signal Processing - 5th International Conference (ICISP 2012)*. 2012, pp. 245–252. DOI: 10.1007/978-3-642-31254-0_28.
13. Alessandro Adamo and Giuliano Grossi. "A fixed-point iterative schema for error minimization in k-sparse decomposition". In: *IEEE Int. Symp. on Signal Processing and Information Technology (ISSPIT 2011)*. 2011, pp. 167–172. DOI: 10.1109/ISSPIT.2011.6151554.
14. Alessandro Adamo and Giuliano Grossi. "Sparsity recovery by iterative orthogonal projections of nonlinear mappings". In: *IEEE Int. Symp. on Signal Processing and Information Technology (ISSPIT 2011)*. 2011, pp. 173–178. DOI: 10.1109/ISSPIT.2011.6151555.
15. Alessandro Adamo and Giuliano Grossi. "Random Pruning of Block-wise Stationary Mixtures for Online BSS". In: *Latent Variable Analysis and Signal Separation - 9th International Conference (LVA/ICA 2010)*. 2010, pp. 213–220. DOI: 10.1007/978-3-642-15995-4_27.
16. Alessandro Adamo, Giuliano Grossi, and Federico Pedersini. "Trade-off between hops and delays in hub-based forwarding in DTNs". In: *Proceedings of the 3rd IFIP Wireless Days Conference 2010*. 2010, pp. 1–5. DOI: 10.1109/WD.2010.5657728.
17. Alberto Bertoni, Marco Frasca, Giuliano Grossi, and Giorgio Valentini. "Learning functional linkage networks with a cost-sensitive approach". In: *Proceedings of the 20th Italian Workshop on Neural Nets (WIRN 2010)*. 2010, pp. 52–61. DOI: 10.3233/978-1-60750-692-8-52.
18. Giuliano Grossi and Federico Pedersini. "Hub-betweenness analysis in delay tolerant networks inferred by real traces". In: *8th International Symposium on Modeling and Optimization in Mobile, Ad-Hoc and Wireless Networks (WiOpt 2010)*. 2010, pp. 318–323.
19. Sabrina Gaito, Giuliano Grossi, and Federico Pedersini. "A two-level social mobility model for trace generation". In: *Proc. of the 9th ACM Int. Symp. on Mobile Ad Hoc Networking and Computing (MobiHoc 2008)*. 2008, pp. 457–458. DOI: 10.1145/1374618.1374685.
20. Sabrina Gaito, Giuliano Grossi, Federico Pedersini, and Paolo Rossi. "Experimental validation of a 2-level social mobility model in opportunistic networks". In: *Wireless Days, 2008. WD '08. 1st IFIP*. 2008, pp. 334–338.

21. Sabrina Gaito and Giuliano Grossi. "Extending Mixture Random Pruning to Nonpolynomial Contrast Functions in FastICA". In: *Signal Processing and Information Technology (ISSPIT 07), IEEE Int. Symp. on.* 2007, pp. 334–338. doi: 10.1109/ISSPIT.2007.4458101.
22. Sabrina Gaito and Giuliano Grossi. "Speeding Up FastICA by Mixture Random Pruning". In: *Independent Component Analysis and Signal Separation, 7th International Conference (ICA 2007).* 2007, pp. 185–192. doi: 10.1007/978-3-540-74494-8_24.
23. Giuliano Grossi, Massimo Marchi, Enrico Pontelli, and Alessandro Proveti. "Experiments with answer set computation over parallel and distributed architectures". In: *4th International Workshop on Answer Set Programming (ASP '07).* 2007, pp. 7–20.
24. Giuliano Grossi and Federico Pedersini. "FPGA Implementation of an Adaptive Stochastic Neural Model". In: *Artificial Neural Networks - ICANN 2007, 17th International Conference.* 2007, pp. 559–568. doi: 10.1007/978-3-540-74690-4_57.
25. Giuliano Grossi. "A Discrete Adaptive Stochastic Neural Model for Constrained Optimization". In: *Artificial Neural Networks (ICANN 2006), 16th International Conference.* 2006, pp. 641–650. doi: 10.1007/11840817_67.
26. G. Grossi and F. Pedersini. "A Stochastic Neural Model for Graph Problems: Software and Hardware Implementation". In: *Neural Networks and Brain (ICNNB '05). International Conference on.* Vol. 1. 2005, pp. 115–120. doi: 10.1109/ICNNB.2005.1614579.
27. Giuliano Grossi and Massimo Marchi. "A New Algorithm for Answer Set Computation". In: *Answer Set Programming, Advances in Theory and Implementation, Proceedings of the 3rd Intl. ASP'05 Workshop.* 2005.
28. Giuliano Grossi and Roberto Posenato. "A Distributed Algorithm for Max Independent Set Problem Based on Hopfield Networks". In: *Neural Nets, 13th Italian Workshop on Neural Nets (WIRN 2002).* 2002, pp. 64–74. doi: 10.1007/3-540-45808-5_6.
29. A. Bertoni, P. Campadelli, and G. Grossi. "Solving Min Vertex Cover with Iterated Hopfield Networks". In: *Neural Nets, 13th Italian Workshop on Neural Nets (WIRN'01).* Springer London, 2001, pp. 87–95. doi: 10.1007/978-1-4471-0219-9_5.
30. Alberto Bertoni, Giuliano Grossi, Alessandro Proveti, Vladik Kreinovich, and Luis Tari. "The Prospect for Answer Sets Computation by a Genetic Model". In: *Answer Set Programming, Towards Efficient and Scalable Knowledge Representation and Reasoning, Proceedings of the 1st Intl. ASP'01 Workshop.* 2001.

31. Alberto Bertoni, Paola Campadelli, and Giuliano Grossi. "An approximation algorithm for the maximum cut problem and its experimental analysis". In: *Algorithms and Experiments (ALEX98)*. Ed. by R. Battiti and A. Bertossi. 1998, pp. 137–143.
32. Alberto Bertoni, Paola Campadelli, Marco Carpentieri, and Giuliano Grossi. "Analysis of a Genetic Model". In: *Proceedings of the 7th International Conference on Genetic Algorithms*. 1997, pp. 121–126.
33. Alberto Bertoni, Paola Campadelli, and Giuliano Grossi. "A Discrete Neural Algorithm for the Maximum Clique Problem: Analysis and Circuit Implementation". In: *Proceedings of the Workshop on Algorithm Engineering (WAE'97)*. Ed. by G.F. Italiano and S. Orlando. 1997, pp. 84–91.
34. Giuliano Grossi. "Sequences of Discrete Hopfield Networks for the Maximum Clique Problem". In: *Neural Nets, 13th Italian Workshop on Neural Nets (WIRN'97)*. Springer London, 1997, pp. 139–146. DOI: 10.1007/978-1-4471-1520-5_8.
35. Alberto Bertoni, Paola Campadelli, Marco Carpentieri, and Giuliano Grossi. "A Genetic Model and the Hopfield Networks". In: *Artificial Neural Networks (ICANN 96), Int. Conf.* 1996, pp. 463–468. DOI: 10.1007/3-540-61510-5_80.
36. Maria Alberta Alberti, Alberto Bertoni, Paola Campadelli, Giuliano Grossi, and Roberto Posenato. "A neural circuit for the maximum 2-satisfiability problem". In: *3rd Euromicro Workshop on Parallel and Distributed Processing (PDP '95)*. 1995, pp. 319–323. DOI: 10.1109/EMPDP.1995.389192.
37. Maria Alberta Alberti, Alberto Bertoni, Paola Campadelli, Giuliano Grossi, and Roberto Posenato. "A neural circuit for the maximum 2-satisfiability problem". In: *Parallel and Distributed Processing. Euromicro Workshop on*. 1995, pp. 319–323. DOI: 10.1109/EMPDP.1995.389192.