

Manuele Bicego

Curriculum vitae

Personal Data

Position and Affiliation:

Associate Professor (Professore associato – s.s.d. ING/INF-05)
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Memberships:

- CBMC: Center for BioMedical Computing, University of Verona
- IEEE: Institute of Electrical and Electronics Engineers
- IAPR (International Association of Pattern Recognition): CVPL (Italian Chapter of IAPR)
- IAPR TC-1: IAPR Technical Committee on Statistical Pattern Recognition Techniques
- IAPR TC-20: IAPR Technical Committee on Pattern Recognition for bioinformatics

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1 Education and previous positions

1.1 Education

- (March 2003): **PhD** in Computer Science: Computer Science Department of University of Verona, thesis title: “Hidden Markov Models for Pattern Recognition and Computer Vision: methodological issues and applications”. Supervisor Prof. Vittorio Murino. Reviewers: Prof. Fabio Roli, Prof. Anil K. Jain
- (December 1999): **Laurea degree (MS)** in Computer Science: University of Verona, thesis title: “Realizzazione e sviluppo di un sistema di classificazione degli odori basato su *array* di sensori chimici” (Realization and development of a chemical sensors array-based electronic nose). Supervisors: Prof. G. Tecchiolli, Prof. G. Tessari and Prof. M. Bettinelli.

1.2 Previous positions

- (October 2008 – June 2017): *Assistant Professor* (Ricercatore Universitario – s.s.d. ING/INF-05) at the University of Verona (Italy)
- (June 2009 - February 2011): *Team Leader* of PAVIS (Pattern Analysis and Computer Vision) department at Italian Institute of Technology (IIT - Istituto Italiano di Tecnologia), Genova (Italy)
- (June 2005 – September 2008) *Assistant Professor* (Ricercatore Universitario – s.s.d. ING/INF-05) at the University of Sassari (Italy)
- (February 2004 – May 2005): *Post-Doc Fellow* at the University of Sassari (Italy)
- (March 2003 – December 2003): *Post-Doc Fellow* at the University of Verona (Italy)

1.3 Qualifications

- January 2020: National Scientific Qualification to Full Professor (ASN Prima Fascia) in the area of Information processing systems (09/H1: Sistemi di Elaborazione delle Informazioni – ING-INF/05).
- January 2014: National Scientific Qualification to Associate Professor (ASN Seconda Fascia) in the area of Computer Science (01/B1: Informatica – INF/01).
- December 2013: National Scientific Qualification to Associate Professor (ASN Seconda Fascia) in the area of Information processing systems (09/H1: Sistemi di Elaborazione delle Informazioni – ING-INF/05).

2 Research Activity

2.1 Research Interests

Manuele Bicego’s research is mainly focused on Pattern Recognition, namely on the study and development of automatic techniques and models able to extract information from real world data, typically in terms of classes or clusters. In the past he worked a lot on probabilistic models - like Hidden Markov Models, Mixtures, Topic Models - and on kernel machines - like Support Vector Machines. In these contexts he designed novel models/methodologies, like hybrid generative-discriminative methods, generative embeddings and kernels, novel classification schemes, model selection techniques and others. Currently he is very interested in problems related to unsupervised learning, such as clustering, biclustering and metric learning. In this context, in recent years he started to investigate approaches based on Random Forests, flexible data description tools which exploitation for unsupervised learning is far from being as mature as in classification/regression.

At the same time, he is involved in application-driven research, where the novel approaches can be tested with challenging real world problems, as well as adapted and tailored in order to derive specific context dependent solutions. In the past he worked a lot on computer vision problems as object recognition from images, videosurveillance and video analysis, person recognition and authentication from images and videos (and, more in general, biometrics). Currently, he is working on seismic signals analysis, bioinformatics and medical data analysis. In this last context, in recent years he started to develop Pattern Recognition e

Machine Learning solutions for specific medical domains, like Neuroscience, Neurology and Neurosurgery, in particular in the context of diseases like brain tumors, Alzheimer or Multiple Sclerosis. The main goal in this research is to devise highly interpretable solutions, being interpretability of methods and solutions the most stringent need in nowadays bioinformatics and medical data analysis.

Keywords

- *Methodological aspects*: Mixture Models, Hidden Markov Models, Topic Models, Graphical Models, Factor Graphs, Generative Kernels, Information Theoretic Kernels, One Class Support Vector Machines, Model Selection, Clustering and Biclustering, Dissimilarity-based representation, Random Forests, Metric learning, Nearest-Neighbor techniques, Bag of words
- *Applicative aspects*: Analysis of expression data – genes or proteins (classification, clustering and biclustering), NMR spectra analysis, Protein Remote Homology detection, Tumor and self-immune diseases classification, Neurosurgery, MRI analysis, Object recognition, video surveillance, Biometrics (face and behaviour), Seismic signal analysis, Odor Classification, Optical microscopy, Financial signal analysis

2.2 Participation to research projects

- PRIVATE (Roche-Basel, Switzerland): *Identifying the molecular mechanisms linking compartmentalized inflammation and disease progression in multiple sclerosis (MS-CONNECT)*, Object: analysis and characterization of immunological aspects of multiple sclerosis. **Role: research activity** (2024 -)
- CARIVERONA (Call “Bando Ricerca Scientifica di Eccellenza 2019”): *Systems neuroscience meets clinical neurosurgery: development of novel multimodal monitoring indices of brain connectivity in patients with glioma (NEURO-CONNECT)*, Object: analysis and characterization of brain-behaviour connections before and after tumor brain surgery **Role: research activity** (2021 -)
- MIUR (Call “Bando PRIN 2017”): *Improving the customer experience in stores by intelligent computer vision (I-MALL)*, Object: study of artificial intelligence techniques for tracking and profiling of people inside commercial malls, **Role: research activity** (2019 - 2023).
- UNIVR (call “Bando Internazionalizzazione di Ateneo 2018 - Azione 4 - CATEGORIA B”): *Investigation of advanced pattern recognition techniques for the understanding of Parkinson’s disease via the analysis of patch-clamp recordings of the striatum*, Object: investigation of advanced techniques for representation and classification of Parkinson data, derived from advanced recording instruments of neuronal activity. Partner: Francisco Escolano (University of Alicante, Alicante (Spain)). **Role: Coordinator.**
- UNIVR (call “Bando di Ateneo per la Ricerca di Base” - 2015): *Beyond the Bag of Words paradigm: a structural and statistical perspective (BeBoW)*, Object: analysis of advanced representation and modelling techniques based sul Bag of Words, Partner: David Tax (Delft University of Technology, Delft (The Netherlands)). **Role: Coordinator.** (2017-2019)
- EU-H2020 (project call WATER-1-2014/2015): *Development and application of Novel, Integrated Tools for monitoring and managing Catchments (INTCATCH)*, Object: advanced techniques for monitoring and managements of lakes and rivers. **Role: research activity** (2016 - 2020).
- UNIVR (COOPERINT 2015 project – Action 4): *Investigation of advanced probabilistic techniques for the detection of Autism Spectrum Disorder in children through imitation games*, Partner: Prof. Mohamed Chetouani – Université Pierre et Marie Curie, Paris (FRANCE). **Role: Coordinator**
- UNIVR (COOPERINT 2012 project – Action A2): *Dissimilarity-based representation for Pattern Recognition*, Partner: Bob Duin – Technical University of Delft (THE NETHERLANDS). **Role: Coordinator**

- UNIVR (COOPERINT 2011 project– Action A1): *Investigation and development of advanced probabilistic techniques for the automated identification of seismic-volcanic and bioacoustic signals*, Partner: Prof. Mauricio Orozco Alzate – Universidad Nacional de Colombia (COLOMBIA). **Role: Coordinator**
- UNIVR (COOPERINT 2010 project – Action B3): *Investigation of advanced Hidden Markov Models-related techniques for the analysis of seismic signals from multiple volcanos*, Partner: Mauricio Orozco-Alzate – Universidad Nacional de Colombia (COLOMBIA). **Role: Coordinator**
- EU-VII P.Q. (FET project number 213250): *Beyond Features: Similarity-based Pattern Analysis and Recognition (SIMBAD)*. **Role: research activity and support to coordination** (2008 - 2011).
- EU-VI P.Q. (project number IST-2002-507634): *Biometrics for Secure Authentication (BIOSECURE) Network of Excellence*. **Role: research activity** (2004 - 2007). Inside the network he also participated to the following Research Projects (Jan 2006 - Jun 2007):
 - *3D face verification using shape and texture*, Research Project 7.2.1.
 - *Biologically inspired face analysis based on selective attention*, Research Project 7.2.2.
 - *Subject specific face recognition*, Research Project 7.2.3.
- PRIVATE (TELECOM Italia): *TELECOM 03: Sistema di autenticazione biometrica basata sul riconoscimento del volto*, funded by TELECOM Italia. **Role: Research activity.** (2004)
- EU-V P.Q. (project number GRD1-2000-25409): *ARROV (Augmented Reality for Remotely Operated Vehicles based on 3D acoustical and optical sensors for underwater inspection and survey)*. **Role: Research activity.** (2001 – 2003)
- MIUR: *SPADA (Spatial Data and Geographic Information Systems)*. **Role: research activity and support to coordination.** (2001 – 2002)
- PRIVATE (Hewlett Packard, “HP Philanthropic Program”): *SOL (The Sounding Landscape)*. **Role: research activity.** (2001 – 2002)

2.3 Present and past collaborations

Institutions inside Italy

- University of Verona: Dept. of Computer Science; Dept. of Engineering for Innovation Medicine; Dept. of Biotechnology; Dept. of Medicine; Dept. of Neurosciences, Biomedicine and Movement Sciences; Dept. of Medicine and Surgery;
- Center for Mind/Brain Sciences (CIMEC), Trento
- Italian Institute of Technology: Dept. of Pattern Analysis and Computer Vision; Dept. of Drug & Discovery; Dept. of Nanoscience;
- University of Sassari: Computer Vision Lab; Dept. of Economic sciences;
- CRS4, POLARIS, Pula - Cagliari;
- CNR, Istituto di Chimica Biomolecolare (ICB) - Sassari;
- University of Venice: Dept. of Computer Science;
- University of Messina: Dept. of Cognitive Sciences, Educational and Cultural Studies;

Institutions outside Italy

- Delft University of Technology, Delft, The Netherlands
- Instituto Superior Técnico, Lisbon, Portugal
- Radboud University, Nijmegen, The Netherlands
- Universidad Nacional de Colombia, Manizales, Colombia

- Universidad de Alicante, Alicante, Spain
- University of Vigo, Vigo, Spain
- Wageningen University, Wageningen, The Netherlands
- Technical University of Dortmund, Dortmund, Germany
- Microsoft Research, Seattle, US
- University of Oxford, Oxford, UK
- ETH, Zurich, Switzerland
- School of Computer Science, University of Manchester, Manchester, UK
- Queen Mary College, London, UK
- Bogazici University, Istanbul, Turkey
- University of A Coruna, A Coruna, Spain
- CWI (Center for Mathematics and Informatics), Amsterdam, The Netherlands

2.4 Main visits and exchanges

- [Apr-Sep 2022], Visit (5 months): Research Center for Telecommunication Technologies (atlanTTIC), University of Vigo, Vigo (Spain)
- [Aug-Sep 2021]: Visitor (1 month): Marco Loog, Pattern Recognition and Bioinformatics Group of the Delft University of Technology, Delft (The Netherlands).
- [Mar-Sep 2018], Visit (6.5 months): Department of Computer Science and Artificial Intelligence, University of Alicante, Alicante (Spain)
- [Feb 2018]: Visitor (1 week): Marco Loog, Information and Communication Theory Group of the Delft University of Technology of Delft (The Netherlands).
- [Feb 2018]: Visitor (1 week): David Tax, Information and Communication Theory Group of the Delft University of Technology of Delft (The Netherlands).
- [Sept-Dec 2017]: Visitor (2.5 months): Mauricio Orozco-Alzate, Department of Informatics and Computing of National University of Colombia (UNAL), Manizales (Colombia).
- [Sep 2016], Visit (1 month): Instituto Superior Técnico, Lisbon (Portugal)
- [May 2015], Visitor (1 month): Marco Loog, Delft University of Technology, Delft (The Netherlands).
- [Sep 2013], Visitor (1 month): Bob Duin, Delft University of Technology, Delft (The Netherlands).
- [Jun 2013], Visitor (1 month): Mauricio Orozco-Alzate, National University of Colombia (UNAL), Manizales (Colombia).
- [Oct-Dec 2011], Visit (3 months): Universidad Nacional de Colombia - Sede Manizales (Colombia)
- [Nov-Dec 2010], Visit (2 weeks): Instituto Superior Técnico, Lisbon (Portugal)
- [May-Jun 2008], Visit (2 weeks): Vigo University, Vigo (Spain)
- [Jun 2007]: Visitor (1 week): Bob Duin, Delft University of Technology, Delft (The Netherlands).
- [Jun 2007]: Visitor (1 week): David Tax, Delft University of Technology, Delft (The Netherlands).
- [Oct-Nov 2007]: Visitor (1.5 months): Daniel Gonzalez Jimenez, Vigo University, Vigo (Spain).
- [Jan 2007], Visit (1 week): Bogazici University, Istanbul (Turkey)
- [Nov-Dec 2006], Visit (1.5 month): Delft University of Technology, Delft (The Netherlands)

- [Oct 2006], Visit (2 weeks): Center for Mathematics and Computer Science, Amsterdam (The Netherlands)
- [Aug 2005], Visit (1 month): École nationale supérieure des télécommunications, Paris (France) – (Participation to the first *BIOSECURE Residential Workshop*, organized by BIOSECURE Network of Excellence)
- [Sep-Dec 2001], Visit (4 months): Instituto Superior Técnico, Lisbon (Portugal)

2.5 Scientific awards

- ICIAP 2023: “Honorable Mention Best Paper Award”

Description: Award assigned to the 2nd best paper at the conference ICIAP 2023

Details: Award received for the paper M. Bicego, M. Vazquez-Enriquez, J.L. Alba-Castro: “Active Class Selection for Dataset Acquisition in Sign Language Recognition”, Proc. Int. Conf. on Image Analysis and Processing (ICIAP2023), (2023)

- SAC 2018: “Best poster award”

Description: Award assigned to the 4 best posters presented at the conference SAC 2018.

Details: Award received for the paper A. Castellini, G.A. Beltrame, M. Bicego, J.J. Blum, M. Denitto, A. Farinelli: “Unsupervised Activity Recognition for Autonomous Water Drones”, Proc. ACM Symposium on Applied Computing (SAC2018), pp. 840-842, (2018)

- CVPR Workshop on Biometrics 2014: “Highest Impact Award”

Description: Award assigned to the paper published in a past edition of the CVPR Biometrics Workshop that has generated highest impact on the research community.

Details: Award received for the paper M. Bicego, A.Lagorio, E. Grosso, M. Tistarelli: On the use of SIFT features for face authentication, Proc. of IEEE CVPR Workshop on Biometrics (2006)

- ICPRAM 2012: “Best student paper award” (Area: Theory and Methods)

Description: Award assigned to the best paper of the ICPRAM 2012 conference, in the area of Theory and Methods, in which the first author is a PhD or MS student.

Details: Award received for the paper A. Carli, M. Figueiredo, M. Bicego, V. Murino: Generative Embeddings Based on Rician Mixtures: Application to Kernel-Based Discriminative Classification of Magnetic Resonance Images, Proc. of Int. Conf. on Pattern Recognition Applications and Methods (ICPRAM2012), (2012)

- ICIAP 2007: “Best poster presentation award”

Description: Award assigned to the best paper presented as a poster at the ICIAP 2007 conference.

Details: Award received for the paper M. Bicego, M. Cristani, V. Murino: Sparseness Achievement in Hidden Markov Models, Proc. Of IEEE Int. Conf. on Image Analysis and Processing (ICIAP 2007), pp. 67-72, (2007)

- University of Sassari 2007 Research award (Premio produttività scientifica 2007)

Description: Award assigned to the best 20 scientists of the whole University of Sassari (selected among all Full Professors, Associated Professors, Assistant Professors, Post Doc and PhD students of scientific areas).

Details: Award received for the years 2005-2006.

3 Dissemination

3.1 Talks

- 4 May 2023: *Random Forests beyond classification and regression*, ELLIS network of excellence speech, Delft University of Technology, Delft (The Netherlands)
- 10 June 2022: *Random Forests for unsupervised Pattern Recognition*, keynote speech at the PhD Progress Workshop of the PhD Programme on Information and Communications Technology (DocTIC), University of Vigo, Vigo (Spain)
- 15 May 2018: *Advanced Bag of Words approaches for Pattern Recognition*, Department of Computer Science and Artificial Intelligence, University of Alicante, Alicante (Spain)
- 16 Sept 2016: *Classification of 2D shapes using bioinformatics tools*, Instituto Superior Técnico, Lisbon (Portugal)
- 25 Sept 2015: *Deriving dissimilarities using bioinformatics tools*, Delft University of Technology, Delft (The Netherlands)
- 5 Dec 2011: *Pattern Recognition for (from) Bioinformatics*, keynote speech at 7th Int. Seminar on Medical Information Processing and Analysis – Bucaramanga (Colombia), 5-7 Dec 2011
- 11 Nov 2011: *Generative Embeddings and Generative Kernels*, Department of Informatics and Computing, Universidad Nacional de Colombia, Manizales (Colombia)
- 26 May 2008: *Hidden Markov Models: methodologies, research trends and applications*, Signal Processing and Communications Dept., Vigo University (Spain)
- 29 Jan 2008: *Clustering di dati: principi e ricadute in bioinformatica*, Dipartimento di Informatica, University of Verona, Verona (Italy)
- 19 Jun 2007: *Pattern Recognition: concetti generali e applicazioni in Bioinformatica*, Dipartimento di Informatica, University of Verona, Verona (Italy)
- 12 Jan 2007: *Hidden Markov Models for face recognition: still images and video*, Computer Engineering Department, Bogazici University, Istanbul (Turkey)
- 18 Oct 2006: *Hidden Markov Models for face recognition: still images and video*, CWI, Amsterdam (The Netherlands)
- 27 Oct 2005: *Face Recognition: From Human to Machine Vision*, keynote speech at the Catalan Congress on Artificial Intelligence, Alghero 26-28 Oct 2005.
- 13 Dec 2004: *Hidden Markov Models per Pattern Recognition: aspetti metodologici e applicativi*, DIEE, University of Cagliari (Italy)
- 19 Oct 2001: *Hidden Markov Models: theory and application to 2D shape recognition* Instituto de Sistemas e Robótica (ISR) - Instituto Superior Técnico - Lisbon (Portugal)

3.2 Presentations at conferences/workshops

ECML-PKDD2023 (Oral), ICIAP2023 (Oral), ICPR2020 (2 Posters), ICDM2020 (Oral), ICIAP2019 (Oral), IJCNN2019 (Poster), EMMCVPR2017 (Oral), S+SSPR2016 (2 orals), ICIAP2015 (Poster), ICPR2014 (3 Poster), NIPS2013 (Poster), CIARP 2011 (Oral), ICPR 2010 (3 Orals), PRIB 2010 (Oral), S+SSPR2010 (Poster), CIP2010 (Poster), SUBSPACE09@ICCV2009 (Poster), EMMCVPR2009 (Poster), ICIAP2007 (2 Posters), HVEI 2007 (Oral), VISAPP 2006 (Poster), ICPR 2004 (Oral), URBAN 2003 (Oral), MLDM 2003 (Oral), MOTION 2002 (Oral), EMMCVPR 2001 (Poster)

3.3 Organization of PhD schools / Cycles of Seminars

- Co-organizer of PhD School “Partially Supervised Learning” (Prof. Marco Loog), Verona, 19-21 May 2015.
- Co-organizer of PhD School “Dissimilarity-based Representation for Pattern Recognition” (Prof. Bob Duin), Verona, 23-26 September 2013.
- Local Co-organizer of PhD School “Social Signal Processing: State Of The Art And Prospects” (Prof. A. Vinciarelli, Dr. D. Gatica-Perez), Sestri Levante (GE), 18-22 July 2010.
- Co-organizer of a cycle of seminars titled “Incontri su temi di Bioinformatica” (Meetings on Bioinformatics themes), Dept. of Computer Science of University of Verona, Feb – Apr 2009 (8 seminars)
- Local support, during 2004-2008, to different editions of the International Summer School on Biometrics, University of Sassari

4 Editorial Activities

4.1 Journals

- **Associate Editor** of *Pattern Recognition* (Jul 2016 - current)
- **Associate Editor** of the *Electronic Letters on Computer Vision and Image Analysis* (past)
- **Associate Editor** of the *International Journal on Imaging* – now *International Journal on Imaging and Robotics* (past)
- **Guest Editor** of *Pattern Recognition* for the special issue titled: “Similarity-based Pattern Recognition” (vol 39(10) - 2006)
- **Reviewer** for the following international journals: ACM Transactions on Intelligent Systems and Technology, Artificial Intelligence in Medicine, Bioinformatics, Computer Vision and Image Understanding, Electronic Letters on Computer Vision and Image Analysis, Electronic Journal of Statistics, Expert Systems with Applications, Geophysical Journal International, IEE Electronic Letters, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, IEEE Transactions on Knowledge and Data Engineering, IEEE Transactions on Geoscience and Remote Sensing, IEEE Transactions on Human-Machine Systems, IEEE Transactions on Image Processing, IEEE Transactions on Information Forensics and Security, IEEE Transactions on Neural Networks and Learning Systems, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on System Man and Cybernetics - Part A, IEEE Transactions on System Man and Cybernetics - Part B, IEEE Transactions on Sustainable Computing Systems, Image and Vision Computing, Information Fusion, Int. Journal of Image and Graphics, International Journal of Applied Evolutionary Computation, International Journal of Tomography & Statistics, Journal of Volcanology and Geothermal Research, Knowledge and Information Systems, Machine Vision and Applications, Neural Computing and Applications, Neurocomputing, Pattern Recognition Letters, Pattern Recognition, Photogrammetric Engineering and Remote Sensing, PLOS One, Sensors and Actuators B, Statistical Analysis and Data Mining, The Photogrammetric Journal of Finland

4.2 Conferences

- **Publicity/Web Chair** of the *18th Int. Conf. on Image Analysis and Processing (ICIAP 2015)*, 7-11 September 2015, Genova, Italy
- **Invited Speaker Chair** of the *Int. Conf. on Pattern Recognition in Bioinformatics (PRIB 2011)*, 2-4 November 2011, Delft, The Netherlands
- **Demo Chair** of the *IAPR Int. Conf. on Biometrics (ICB 2009)*, 2 - 5 June 2009, Alghero, Italy

- **Member of the Scientific/Technical/Program/Reviewing Committee** of the following international conferences or workshops: VISAPP(2006, 2008), VIIP (2006, 2007, 2008), CompIMAGE (2006, 2010, 2012, 2014), VIPIMAGE (2007, 2009, 2013, 2015, 2017, 2019), ICGD&BC (2007), ADVCOMP (2007, 2008), ICIMP (2008, 2009, 2010), CIP (2008), HBU@ICPR (2010), IBPRIA (2011, 2013), SIMBAD (2011, 2013, 2015), IJCAI (2015), AALTD@ECML-PKDD (2015) ICPR (2008, 2014, 2016, 2018, 2020), BMVC (2016), S+SSPR (2016, 2018, 2020, 2022), BIOKDD (2016), ICIAP (2019, 2021, 2023), ICLR (2021, 2022, 2023), NIPS (2014, 2015, 2020, 2021), ICML (2022), ECML-PKDD (2023, 2024), KDD (2024)

5 Teaching, supervision and institutional duties

5.1 Teaching

BS level:

- from AA 2021/22 to present: “Elaborazione di segnali e immagini (Lab)” (Lab of Signal and Image processing), Bachelor degree in Computer Science, University of Verona
- from AA 2009/10 to present: “Riconoscimento e recupero di Informazioni per bioinformatica” (Pattern Recognition for bioinformatics), Bachelor degree in Bioinformatics, University of Verona
- AA 2008/09: “Recupero dell’Informazione” (Information Retrieval), Bachelor degree in Bioinformatics, University of Verona.
- AA 2008/09: “Laboratorio di Algoritmi e Strutture Dati” (Laboratory of Algorithms and Data Structures), Bachelor degree in Bioinformatics, University of Verona.
- from AA 2003/04 to AA 2007/08: “Fondamenti di Informatica” (Basics of Computer Science), Bachelor degree in Economics and Tourism Management, University of Sassari.
- AA 2002/03: “Laboratorio di Sistemi e Segnali” (Laboratory of System Theory), Bachelor degree in Information Technologies: Multimedia, University of Verona

MS level:

- from AA 2021/22 to present: (in English) “Machine Learning for biological structures and networks”, Master degree in Medical Bioinformatics, University of Verona.
- from AA 2016/17 to AA 2020/21: (in English) “Computational analysis of biological structures and networks”, Master degree in Medical Bioinformatics, University of Verona

PhD level:

- AA 2019/20, AA 2020/2021: (in English) “Advanced topics in Unsupervised Pattern Recognition”, PhD degree in Computer Science, University of Verona.
- AA 2011/12: (in English) “A short course on Hidden Markov Models and applications”, Department of Informatics and Computing, Universidad Nacional de Colombia, Manizales (Colombia)

5.2 Thesis Supervision

- Supervisor of 72 thesis for the Bachelor degree in Bioinformatics, University of Verona
- Supervisor of 1 thesis for the Master Degree in Computer Science and Engineering, University of Verona
- Supervisor of 9 thesis for the Master Degree in Medical Bioinformatics, University of Verona
- Co-supervisor of 10 Master Degree thesis at Universities of Verona and Sassari

5.3 Supervision and revision of PhD thesis

- Member of the Council of the PhD School in Computer Science at the University of Verona (Italy): from 2009 to present
- Member of 19 PhD tutoring committees (PhD in Computer Science) at the University of Verona (23°, 24°, 27°, 28°, 29°, 31°, 32°, 34°, 35°, 36°, 37° and 38° cycles)
- Advisor:
 - Antonella Mensi (PhD student in Computer Science, University of Verona, 34° cycle), graduation: June 2022
 - Matteo Denitto (PhD student in Computer Science, University of Verona, 29° cycle), graduation: May 2017
 - Pietro Lovato (PhD student in Computer Science, University of Verona, 27° cycle), graduation: May 2015
- Co-advisor:
 - Alberto Azzari (PhD student in Artificial Intelligence, Politecnico di Torino, 38° cycle), in progress
- Reviewer of the PhD thesis and member of the final PhD defense committee:
 - Tom Viering, “On safety in Machine Learning”, Technical University of Delft (The Netherlands), PhD advisors: E. Eiseemann and M. Loog (May 2023)
 - Manuel Curado Navarro, “Structural similarity: applications to object recognition and clustering”, University of Alicante, Dept. of Computer Science and Artificial Intelligence, PhD advisors D. Francisco Escolano Ruiz and D. Juan Manuel Sàez Martínez (Sep 2018)
 - Y. Plasencia Calana, “Prototype selection for classification in standard and generalized dissimilarity spaces”, Technical University of Delft, PhD advisors: Marcel Reinders e Bob Duin (September 2015)
 - Marcos Ortega Hortas, “Automatic System for personal authentication using the retinal vessel tree as biometric pattern”, Universidade da Coruna (Spain), Facultade de Informatica, Departamento de Computación. PhD advisor: Manuel Fco. González Penedo (July 2009)
 - Daniel González Jiménez, “Improvements in pose invariance and local description for Gabor-based 2D face recognition”, Universidade de Vigo (Spain): Teoria do sinal e comunicacións. PhD advisor: José Luis Alba Castro (May 2008)
- Reviewer of the PhD thesis:
 - Plácido Francisco Lizancos Vidal, “Automatic detection and characterization of pathological fluid regions in Optical Coherence Tomography Images”, University of A Coruña (Spain), PhD advisors: Jorge Novo Buján and Marcos Ortega Hortas (Jul 2023)
 - Tommaso Barbariol, “Improving Anomaly Detection for Industrial Applications”, University of Padova (Italy), Department of Information Engineering, PhD advisor Gian Antonio Susto (Jan 2023)
 - Michele Schiavinato, “Transformation Synchronization with Applications in Computer Vision”, PhD in Computer Science, University of Venice, PhD advisor: Andrea Torsello (Oct 2017)
 - Luca Magri, “Multiple structures recovery via preference analysis in conceptual space”, Ph.D. in Mathematics and Statistics for the Computational Sciences, Dip. di Matematica “Federigo Enriques”, PhD advisor: Giovanni Naldi e Andrea Fusiello (Oct 2015)
- Member of the final PhD defense committee:
 - Giulia Costantini, Gian-Luca Dei Rossi and Luca Rossi, PhD in Computer Science, University of Venice (December 2013)

5.4 Institutional duties

- Member of the Student Career Evaluation committee of the Computer Science department of University of Verona (2009 - present)
- Member of the Con.Scienze Prizes Selection Committee at the Department of Computer Science, University of Verona (2023)
- Member of the Foreign students evaluation Committee of the Master degree in Medical Bioinformatics, University of Verona (2023 - present)
- Member of the Tutoring Service Committee (Master level) for the Computer Science Department, University of Verona (2024 - present)
- Member of the Promoting Committee for the creation of the inter-University BS course on “Human Centered Medical System Engineering” (“Ingegneria dei Sistemi Medicali per la persona”), University of Verona (2021).
- Member of the Spinoff committee of the computer science department of University of Verona (2012 - 2015)
- Responsible and presenter of different open days at the the computer science department of University of Verona (2008 - 2012)
- Member of international relations committee of University of Sassari (2007-2008)
- Member of several final degree committes for BS and MS degrees at the University of Verona and University of Sassari (2006-present)
- Member of several tutoring committes at the University of Verona (2009-present)

6 Publications

6.1 Patents

1. M. Baltatu, R. D’Alessandro, R. D’Amico, M. Tistarelli, E. Grosso, M. Bicego: “Automatic biometric identification based on face recognition and support vector machines” (WO2007016936A1, owner: Telecom Italia S.p.A.):
 - European Patent: EP1910977A1 (2008), EP1910977B1 (2016)
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