

MANUELE BICEGO

Curriculum Vitae

PERSONAL DATA

Name Manuele Bicego
Current position Ricercatore (Assistant Professor)
Institution University of Verona
Department Dipartimento di Informatica, Strada le grazie 15 - 37135 - Verona (Italy)
Contacts e-mail: manuele.bicego@univr.it, manuele.bicego@iit.it
Web page: <http://profs.sci.univr.it/~bicego/>

Memberships Member of the VIPS (Vision, Image Processing & Sound) Lab
(University of Verona - Italy)

Member of the Plus (Pattern analysis, Learning, and image Understanding) Lab
(Istituto Italiano di Tecnologia - IIT - Italy)

EDUCATION

- **PhD** in Computer Science: Computer Science Department of University of Verona, with a thesis titled “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 (April 2000 – March 2003)
- **Laurea degree (MS)** in Computer Science: University of Verona, with a thesis titled “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. (December 1999)

RESEARCH ACTIVITIES

1. Research Interests

- Hidden Markov Models: model selection, learning strategies, hybrid classification schemes, extensions of basic models and applications, generative kernels
- Unsupervised classification: clustering of sequences, kernel methods
- Biometrics: face authentication and recognition, facial feature extraction, video-based face analysis, multimodal biometrics
- Computer Vision: object recognition, video analysis
- Bioinformatics: phylogeny, odor classification, microarray image analysis, NMR analysis

2. Visits

- Visits to the *Telecommunication and Pattern Recognition Lab* of the Instituto Superior Técnico of Lisbon (Portugal) - Prof. Mário A.T. Figueiredo. (Nov - Dec 2009 - 2 weeks)
- Visit to the *Signal Processing and Communications Dept.* of the Vigo University of Vigo (Spain) - Prof. José Luis Alba-Castro. (May - Jun 2008 - 2 weeks)
- Visit to the *Perceptual Intelligence Laboratory* of the Bogazici University of Istanbul (Turkey) - Prof. Lale Akarun. (Jan 2007 - 1 week)
- Visit to the *Information and Communication Theory Group* of the Delft University of Technology of Delft (The Netherlands) - Prof. Robert P.W. Duin. (Nov - Dec 2006 - 6 weeks)
- Visit to the *Center for Mathematics and Computer Science* of Amsterdam (The Netherlands) - Dr. Ben Schouten. (Oct 2006 - 2 weeks)
- Participation to the first *BIOSECURE Residential Workshop*, organized by BIOSECURE Network of Excellence, at the *École nationale supérieure des télécommunications* of Paris (France). (Aug 2005 - 4 weeks)
- Visits to the *Telecommunication and Pattern Recognition Lab* of the Instituto Superior Técnico of Lisbon (Portugal) - Prof. Mário A.T. Figueiredo. (Sep - Dec 2001 - 4 months)

EDITORIAL ACTIVITIES

1. **Member of the Editorial board** of *Electronic Letters on Computer Vision and Image Analysis* (January 2004-)
2. **Member of the Editorial board** of *International Journal of Imaging* (July 2008-)
3. **Guest Editor** of the special issue of the international journal *Pattern Recognition* on “Similarity-based Pattern Recognition” (vol 39(10) - 2006)
4. **Demo Chair** of the third *IAPR Int. Conf. on Biometrics (ICB 2009)*, 2 - 5 June 2009, Alghero, Italy
5. **Member of the Scientific/Program/Technical Committee** of the following international conferences:
 - Int. Conf. on Computer Vision Theory and Applications (VISAPP): 2006, 2008
 - IASTED Int. Conf. on Visualization, Imaging and Image Processing (VIIP): 2006, 2007, 2008, 2009
 - CompIMAGE Symposium: Computational Modelling of Objects Represented in Images: Fundamentals, Methods and Applications: 2006, 2010
 - Eccomas Thematic Conf. on Computational Vision and Medical Image Processing (VIPIMAGE): 2007, 2009
 - Int. Conf. on Global Defense and Business Continuity (ICGD&BC): 2007
 - Int. Conf. on Advanced Engineering Computing and Applications in Sciences (ADVCOMP): 2007, 2008
 - Int. Conf. on Internet Monitoring and Protection (ICIMP): 2008
 - IAPR Workshop on Cognitive Information Processing (CIP): 2008
 - IEEE Int. Conf. on Pattern Recognition (ICPR): 2008, 2010

6. **Reviewer** for the following international journals (16): IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on System Man and Cybernetics - Part A / Part B, IEEE Transactions on Information Forensics and Security, IEE Electronic Letters, Sensors and Actuators B, Electronic Letters on Computer Vision and Image Analysis, Photogrammetric Engineering and Remote Sensing, Pattern Recognition Letters, Pattern Recognition, Neural Computing and Applications, Image and Vision Computing, The Photogrammetric Journal of Finland, Int. Journal of Image and Graphics, International Journal of Tomography & Statistics, International Journal of Applied Evolutionary Computation, Bioinformatics, Computer Vision and Image Understanding
7. **Reviewer** for different international conferences and workshops

INVITED TALKS

- 26/5/2008: *Hidden Markov Models: methodologies, research trends and applications*, Signal Processing and Communications Department, Vigo University, Vigo (Spain)
- 29/1/2008: *Clustering di dati: principi e ricadute in bioinformatica*, Computer Science Department, University of Verona, Verona (Italy) (in Italian)
- 19/6/2007: *Pattern Recognition: concetti generali e applicazioni in Bioinformatica*, Computer Science Department, University of Verona, Verona (Italy) (in Italian)
- 12/01/2007: *Hidden Markov Models for face recognition: still images and video*, Computer Engineering Department, Bogazici University, Istanbul (Turkey)
- 18/10/2006: *Hidden Markov Models for face recognition: still images and video*, CWI, Amsterdam (The Netherlands)
- 27/10/2005: *“Face Recognition: From Human to Machine Vision”*, keynote lecture at the Catalan workshop on Artificial Intelligence, Alghero 26-28 October 2005.
- 13/10/2004: *“Hidden Markov Models per Pattern Recognition: aspetti metodologici e applicativi”*, DIEE, University of Cagliari, Cagliari (Italy) (in Italian)
- 19/10/2001: *“Hidden Markov Models: theory and application to 2D shape recognition”* Instituto Superior Técnico - Lisbon (Portugal)
- Moreover, I presented different papers at international conferences and workshops (papers 67, 62, 49, 48, 64, 61, 59, 54, 53, 46, 35, 36)

OTHER

1. Awards:

- “Premio produttività scientifica 2007” (Scientific productivity award 2007) from the University of Sassari, for years 2005-2006.
- “Best poster presentation award”, assigned at the Int. Conf on Image Analysis and Processing 2007 (see [35]) (2007)

- “Biosecure Network of Excellence Mobility Grant”, for a Long-term scientific mission (CWI - Amsterdam - Ottobre 2006) (2006)
- “Borsa Post-Doc” (post-doctoral grant), Computer Science Department, University of Verona (2003)
- “Progetto Giovani Ricercatori”, from University of Verona (2001)
- “Socrates - Erasmus” grant, University of Verona (2001)

2. Affiliation:

- IEEE Systems Man and Cybernetics society
- IAPR (GIRPR - Gruppo Italiano Ricercatori in Pattern Recognition)

PUBLICATIONS

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”, European Patent, International Publication Number WO 2007/016936 A1, (2007)

Books

2. E. Grosso, M. Bicego: “Fondamenti di Informatica per l’Università” (in Italian), Giappichelli Editore, Torino, (2007)

Chapters in books (invited):

3. M. Tistarelli, M. Bicego, J.L. Alba-Castro, D. Gonzalez-Jimenez, A.A. Salah, A. Mellakh, D. Petrovska-Delacretaz, B. Dorizzi: “2D face recognition”, chapter of the book *Biometric Reference Systems and Evaluation Framework*, D. Petrovska-Delacretaz, G. Chollet and B. Dorizzi Eds, Springer, (2009)
4. R. Chellappa, M. Bicego, P. Turaga: “A review of video-based Face Recognition Algorithms”, chapter in *Handbook of Remote Biometrics for Surveillance and Security*, M. Tistarelli, S.Z. Li, R. Chellappa Eds, Springer, (2009)

Papers in International Journals:

5. M. Bicego, E. Pekalska, D.M.J. Tax, R.P.W. Duin, “Component-based discriminative classification for Hidden Markov Models”, *Pattern Recognition*, vol 42(11), pp. 2637-2648, (2009)
6. G. Brelstaff, M. Bicego, N. Culeddu, M. Chessa: “Bag of Peaks: interpretation of NMR spectroscopy”, *Bioinformatics*, vol. 25, pp 258-264, (2009)
7. M. Bicego, M.A.T. Figueiredo: “Soft Clustering using Weighted One Class Support Vector Machines”, *Pattern Recognition*, vol. 42(1), pp. 27-32, (2009)
8. M. Tistarelli, M. Bicego, E. Grosso: “Dynamic face recognition: from Human to Machine Vision”, *Image and Vision Computing*, vol. 27(3), pp. 222-232, (2009)

9. M. Bicego, E. Grosso, A. Lagorio, G. Brelstaff, L. Brodo, M. Tistarelli: “Distinctiveness of faces: a computational approach”, *ACM Trans. on Applied Perception*, vol. 5(2), (2008)
10. M. Bicego, F. Dellaglio, G.E. Felis: “Multimodal Phylogeny for Taxonomy: integrating information from nucleotide and aminoacid sequences”, *Journal of Bioinformatics and Computational Biology*, vol 5(5), pp. 1069-1085, (2007)
11. M. Cristani, M. Bicego, V. Murino: “Audio-Visual Event Recognition in Surveillance Video Sequences”, *IEEE Trans. on Multimedia*, vol 9(2), pp. 257-267, (2007)
12. G.J. Brelstaff, L. Brodo, M. Bicego, E. Grosso: “Face-pair scrutiny - subject-type classification”, *Perception*, vol 35 sup, p. 209, (2006)
13. M. Bicego, V. Murino, M. Pelillo, A. Torsello: “Similarity-based Pattern Recognition”, editorial message of the special issue on “Similarity-based Pattern Recognition”, *Pattern Recognition*, vol 39(10), pp. 1813-1814, (2006)
14. M. Bicego, M. Cristani, V. Murino: “Unsupervised Scene Analysis: a Hidden Markov Model approach”, *Computer Vision and Image Understanding*, vol 102, pp. 22-41, (2006)
15. M. Bicego, U. Castellani, V. Murino: “A Hidden Markov Model approach for appearance-based 3D object recognition”, *Pattern Recognition Letters*, vol 26(16), pp. 2588-2599, (2005)
16. M. Bicego, M. Del Rosario Martinez, V. Murino: “A supervised data-driven approach for microarray spot quality classification”. *Pattern Analysis and Applications*, vol 8, pp. 181–187, (2005)
17. M. Bicego: “Odor classification using similarity-based representation”, *Sensors and Actuators B*, vol 110(2), pp. 225–230, (2005)
18. M. Bicego, V. Murino, M.A.T. Figueiredo: “Similarity-Based Classification of Sequences using hidden Markov models”, *Pattern Recognition*, vol 37(12), pp. 2281-2291, (2004)
19. M. Bicego, V. Murino: “Investigating Hidden Markov Models’ capabilities in 2D shape classification”, *IEEE Transactions on Pattern Analysis and Machine Intelligence - PAMI*, vol 26(2), pp. 281–286, (2004)
20. M. Bicego, V. Murino, M.A.T. Figueiredo: “A sequential pruning strategy for the selection of the number of states in Hidden Markov Models”. *Pattern Recognition Letters*, vol. 24(9–10), pp. 1395–1407, (2003)
21. M. Bicego, G. Tessari, G. Tecchiolli, M. Bettinelli: “A comparative analysis of basic Pattern Recognition techniques for the development of small size electronic nose”. *Sensors and Actuators B*, vol. 85(1-2), pp. 137–144, (2002)

Papers on conference proceedings / edited books :

- 22 A. Carli, U. Castellani, M. Bicego, V. Murino, “Dissimilarity-based representation for Local Parts”, *Proc. Int. Workshop on Cognitive Information Processing (CIP10)*, accepted, (2010)
- 23 M. Bicego, P. Lovato, B. Oliboni, A. Perina, “Expression Microarray Classification using Topic Models”, *Proc. Int. Conf on ACM-SAC – Track on Bioinformatics and Computational Systems Biology (ACMSAC2010-BIO)*, accepted, (2010)
- 24 A. Carli, M. Bicego, S. Baldo, V. Murino, “Non-linear Generative Embeddings for Kernels on Latent Variable Model”, *Proc. of ICCV09 Workshop on Subspace Methods (SUBSPACE 2009)*, accepted, (2009)

- 25 M. Bicego, M. Cristani, V. Murino, E. Pekalska, R. Duin, “Clustering-based construction of Hidden Markov Models for generative kernels”, *Proc. of Int. Conf. on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR 2009)*, accepted, (2009)
- 26 D. S. Cheng, M. Bicego, U. Castellani, S. Cerruti, M. Bellini, G. Rambaldelli, M. Aztori, P. Brambilla, V. Murino, “Schizophrenia Classification Using Regions of Interest in Brain MRI”, *Proc. Intelligent Data Analysis in Biomedicine and Pharmacology (IDAMAP 2009)*, in conjunction with AIME09, accepted, (2009)
- 27 L. Bazzani, M. Cristani, M. Bicego, V. Murino, “Subjective online feature selection for occlusion management in tracking applications”, *Proc. Int. Conf. on Image Processing (ICIP 2009)*, accepted, (2009)
- 28 D. S. Cheng, M. Bicego, U. Castellani, M. Cristani, S. Cerruti, M. Bellani, G. Rambaldelli, M. Aztori, P. Brambilla, V. Murino, “A Hybrid Generative/Discriminative Method for Classification of Regions of Interest in Schizophrenia Brain MRI”, *Proc. of MICCAI09 workshop on Probabilistic Models for Medical Image Analysis (PMMIA 2009)*, accepted, (2009)
- 29 M. Ortega Hortas, L. Brodo, M. Bicego, M. Tistarelli, “Measuring Changes in Face Appearance through Aging”, *Proc. of CVPR09 Workshop on Biometrics*, accepted, (2009)
- 30 M. Ortega Hortas, L. Brodo, M. Bicego, M. Tistarelli, “On the quantitative estimation of short-term aging in human faces”, *Proc. Int. Conf. on Image Analysis and Processing (ICIAP 2009)*, accepted, (2009)
- 31 M. Cadoni, M. Bicego, E. Grosso, “3D face recognition using joint differential invariants”, *Proc. Int. Conf. on Biometrics (ICB 2009)*, accepted, (2009)
- 32 M. Bicego, E. Grosso, E. Otranto: “A Hidden Markov Model approach to classify and predict the sign of financial local trends”, *Proc. of IAPR Int. Workshop on Statistical Pattern Recognition (SPR 2009)*, pp. 852-861, (2008)
- 33 M. Bicego, A. Trudda: “2D shape classification using multifractional Brownian motion”, *Proc. of IAPR Int. Workshop on Statistical Pattern Recognition (SPR 2009)*, pp. 906-916, (2008)
- 34 M. Bicego, D. Gonzalez-Jimenez, E. Grosso, J. Alba-Castro: “Generalized Gaussian Distributions for Sequential Data Classification”, *Proc. of IEEE Int. Conf. on Pattern Recognition (ICPR 2008)*, pp. 1-4, (2008)
- 35 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) (**best poster presentation award**)
- 36 M. Bicego, A.A. Salah, E. Grosso, M. Tistarelli, L. Akarun: “Generalization in Holistic versus Analytic Processing of Faces”, *Proc. Of IEEE Int. Conf. on Image Analysis and Processing (ICIAP 2007)*, pp. 235-240, (2007)
- 37 A. Rattani, D.R. Kisku, M. Bicego, M. Tistarelli: “Feature Level Fusion of Face and Fingerprint Biometrics”, *Proc. of IEEE Int. Conf. on Biometrics: Theory, Applications and Systems (BTAS 2007)*, pp. 1-6, (2007)
- 38 M. Tistarelli, L. Brodo, A. Lagorio, M. Bicego: “Recognition of human faces: from biological to artificial vision”, *Brain, Vision and Artificial Intelligence 2007 (BVAI07)*, LNCS 4729, F. Mele, G. Ramella, S. Santillo and F. Ventriglia Eds, pp. 191-213, (2007)

- 39 D. Gonzalez-Jimenez, M. Bicego, J.W.H. Tangelder, B.A.M Schouten, O. Ambekar, J.L. Alba-Castro, E. Grosso, M. Tistarelli: “Distance Measures for Gabor Jets-based Face Authentication: A Comparative Evaluation”, *Advances in Biometrics (ICB07)*, LNCS 4642, Seong-Whan Lee and Stan Z. Li Eds., pp. 474-483, (2007)
- 40 M. Bicego, E. Pekalska and R.P.W. Duin: “Group-induced vector spaces”, *Multiple Classifier Systems (MCS07)*, LNCS 4472, M. Haindl, J. Kittler, and F. Roli Eds., pp. 190-199, (2007)
- 41 A. A. Salah, M. Bicego, L. Akarun, E. Grosso, M. Tistarelli: “Hidden Markov model-based face recognition using selective attention”, *Human Vision and Electronic Imaging XII*, Proc. of SPIE, vol. 6492, (2007)
- 42 A. Rattani, D.R. Kisku, M. Bicego, M. Tistarelli: “Robust Feature-Level Multibiometric Classification”, *Proc. of IEEE Biometrics Symposium (BSYM06)*, pp. 1-6, (2006)
- 43 M. Tistarelli, M. Bicego, E. Grosso: “Recognizing people’s faces: from Human to Machine vision”, *Proc. of IEEE Int. Conf. on Control, Automation, Robotics and Vision (ICARCV06)*, pp. 1-7, (2006)
- 44 M. Bicego, A. Lagorio, E. Grosso, M. Tistarelli: “On the use of SIFT features for face authentication”, *Proc. of Int. CVPR 2006 Workshop on Biometrics*, pp. 35, (2006)
- 45 M. Cristani, M. Bicego, V. Murino: “Audio-visual foreground extraction for events characterization”, *Proc. of Int. CVPR 2006 Workshop on Semantic Learning Applications in Multimedia*, pp. 116, (2006)
- 46 L. Brodo, M. Bicego, G. Brelstaff, A. Lagorio, M. Tistarelli, E. Grosso: “Comparing Faces: a computational and perceptual study”. *Proc. of Int. Conf. on Computer Vision Theory and Application (VISAPP06)*, pp. 188-191, (2006)
- 47 M. Bicego, E. Grosso, M. Tistarelli: “Person Authentication from video of faces: a behavioral and physiological approach using Pseudo Hierarchical Hidden Markov Models”, *Int. Conf. On Biometrics (ICB06)*, LNCS 3832, D. Zhang, A.K. Jain Eds, pp 113-120, (2006).
- 48 U. Castellani, M. Bicego, G. Iacono, V. Murino: “3D Face Recognition Using Stereoscopic Vision”, *Advanced Studies in Biometrics*, LNCS 3161, M. Tistarelli, J. Bigun Eds, p. 126, (2005)
- 49 M. Bicego, E. Grosso, M. Tistarelli: “Probabilistic face authentication using Hidden Markov Models”, *Biometric Technology for Human Identification II*, Proc. of SPIE, vol. 5779, A.K. Jain, N.K. Ratha Eds., pp. 299–306, (2005).
- 50 M. Bicego, E. Grosso, M. Tistarelli: “Face Authentication Using One-Class Support Vector Machines”, *Advances in Biometric Person Authentication: International Workshop on Biometric Recognition Systems*, in congiunzione con *Int. Conf. on Computer Vision*, LNCS 3781, S.Z. Li, Z. Sun, T. Tan, S. Pankanti, G. Chollet, D. Zhang Eds., pp. 15, (2005)
- 51 S. Ceresola, A. Fusiello, M. Bicego, A. Belussi, V. Murino: “Automatic updating of urban vector maps”, *Image Analysis and Processing*, LNCS 3617, F. Roli, S. Vitulano Eds., pp. 1133–1139, (2005)
- 52 M. Bicego, E. Grosso, M. Tistarelli: “On finding differences between faces”, *Audio- and Video-based Biometric Person Authentication*, LNCS 3546, T. Kanade, A. Jain, and N.K. Ratha Eds., pp. 329–338, (2005).
- 53 V. Murino, M. Bicego, I. Rossi: “Statistical classification of raw textile defects”. *Proc. of IEEE Int. Conf. on Pattern Recognition (ICPR04)*, vol 4, pp. 311–314, (2004)
- 54 M. Cristani, M. Bicego, V. Murino: “On-line adaptive background modelling for audio surveillance”. *Proc. of IEEE Int. Conf. on Pattern Recognition (ICPR04)*, vol 2, pp. 399–402, (2004)

- 55 A. Castellani, D. Botturi, M. Bicego, P. Fiorini: “Hybrid HMM/SVM Model for the Analysis and Segmentation of Teleoperation Tasks”. *Proc. of IEEE Int. Conf. on Robotics and Automation (ICRA04)*, pp. 2918–2923, (2004)
- 56 M. Cristani, M. Bicego, V. Murino: “Audio-video integration for background modelling”, *European Conference on Computer Vision*, LNCS 3022, T. Pajdla, J. Matas Eds., pp. 202–213, (2004)
- 57 M. Bicego, G. Iacono, V. Murino: “Face recognition with Multilevel B-Splines and Support Vector Machines”, *Proc. of ACM SIGMM Multimedia Biometrics Methods and Applications Workshop (WBMA03)*, in congiunzione con *11-th ACM Int. Conf. on Multimedia*, pp. 17–24, (2003)
- 58 M. Cristani, M. Bicego, V. Murino: “Multi-level Background Initialization using Hidden Markov Models”, *Proc. of ACM SIGMM Workshop on Video Surveillance (IWVS03)*, in congiunzione con *11-th ACM Int. Conf. on Multimedia*, pp. 11–20, (2003)
- 59 M. Bicego, U. Castellani, V. Murino: “Using Hidden Markov Models and Wavelets for face recognition”, *Proc. of IEEE Int. Conf. on Image Analysis and Processing (ICIAP03)*, pp. 52–56, (2003)
- 60 M. Bicego, S. Dalfini, G. Vernazza, V. Murino: “Automatic road extraction from aerial images by probabilistic contour tracking”, *Proc. of IEEE Int. Conf. on Image Processing (ICIP03)*, vol. III, pp. 585–588, (2003)
- 61 M. Bicego, S. Dalfini, V. Murino: “Extraction of geographical entities from aerial images”. *Proc. of Joint Workshop on Remote Sensing and Data fusion over Urban Areas (URBAN03)*, pp. 125–128, (2003)
- 62 M. Bicego, V. Murino, M.A.T. Figueiredo: “Similarity-Based Clustering of Sequences using Hidden Markov Models”, *Machine Learning and Data Mining*, LNAI 2734, P. Perner, A. Rosenfeld Eds., Springer, pp. 86–95, (2003)
- 63 M. Bicego, M. Cristani, A. Fusiello, V. Murino: “Watershed-based unsupervised clustering”, *Energy Minimization Methods in Computer Vision and Pattern Recognition*, LNCS 2683, A. Rangarajan, M.A.T. Figueiredo, J. Zerubia Eds., Springer, pp. 83–94, (2003)
- 64 M. Cristani, M. Bicego, V. Murino: “Integrated Region- and Pixel-based Approach to Background Modelling”. *Proc. of IEEE Workshop on Motion and Video Computing (MOTION02)*, pp. 3–8, (2002)
- 65 A. Panuccio, M. Bicego, V. Murino: “A Hidden Markov Model-based approach to sequential data clustering”. *Structural, Syntactic and Statistical Pattern Recognition*, LNCS 2396, T. Caelli, A. Amin, R.P.W. Duin, M. Kamel, D. de Ridder Eds., Springer, pp. 734–742, (2002)
- 66 M. Bicego, V. Murino: “2D shape recognition by Hidden Markov Models”. *Proc. of 11th IEEE Int. Conf. on Image Analysis and Processing (ICIAP01)*, pp. 20–24, (2001)
- 67 M. Bicego, A. Dovier, V. Murino: “Designing the Minimal Structure of Hidden Markov Models by Bisimulation”. *Energy Minimization Methods in Computer Vision and Pattern Recognition*, LNCS 2134, M.A.T. Figueiredo, J. Zerubia, A.K. Jain Eds., Springer, pp. 75–90, (2001)

Technical Reports / Posters / Others :

- 68 M. Bicego, E. Grosso, E. Otranto: “Analyzing the sign of financial local trends via Hidden Markov Models”, *Medium for Econometric Applications*, vol. 16(4), pp. 16–22, (2009)
- 69 M. Bicego, E. Grosso, E. Otranto: “A Hidden Markov Model approach to classify and predict the sign of financial local trends”, CRENoS working paper n° 2008-03, (2008)

- 70 M. Bicego, G. Brelstaff, N. Culeddu, M. Chessa: “Bag of Peaks: Interpretation of NMR Spectroscopy”, poster at the *7th European Conference on Computational Biology*, (2008)
- 71 D. Porcheddu, G. Atzeni, M. Bicego: “Ordinamenti dimensionali d’impresa attraverso metodologie multiple classifier systems (MCS)”, *Economia e politica industriale*, (2007) (in Italian)

Verona, 17/03/2010