CURRICULUM VITAE ET STUDIORUM

Marco Tagliasacchi

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PERSONAL DATA

First name	Marco
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Place of birth	Como (Italy)
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ACADEMIC POSITIONS AND AFFILIATIONS

Since 02/2007	Assistant Professor (ricercatore di ruolo non confermato) at the Department of Electronics and Information (Dipartimento di Elettronica e Informazione), Politecnico di Milano, Italy
04/2006-1/2007	Post-doc research assistant (assegnista di ricerca) at the Department of Electronics and Information, Politecnico di Milano, Italy
03/2003-02/2006	Ph.D. student in Information Engineering at the Department of Electronics and Information, Politecnico di Milano, Italy
01/2004-07-2004	Visiting scholar at the University of California at Berkeley affiliated with the Basics group (Berkeley Audio-Visual and Communication Systems, Prof. Kannan Ramchandran)

AFFILIATIONS

Since 01/2009	Elected member of the IEEE Multimedia Signal Processing Technical Committee.
Since 01/2009	Member of the ACM
Since 01/2009	Member of the IEEE Computer Society
Since 01/2007	Member of the IEEE Member of the IEEE Signal Processing Society
Since 01/2004	Student Member of the IEEE (Institute of Electrical and Electronics Engineers) Member of the IEEE Signal Processing Society
2004-2005	Member of the MPEG (Movie Picture Expert Group, ISO/IEC JTC 1/SC 29/WG 11) working group

EDUCATION

03/2003-02/2006	Ph.D. student in Information Engineering at the Department of Electronics and Information, Politecnico di Milano, Italy Thesis title: "Advanced scalable video coding techniques" Advisor: Prof. Stefano Tubaro
02/2002	Laurea degree (a five year program that combines B.Sc. and M.Sc.) in Computer Engineering at the Politecnico di Milano, Italy • Final grade: summa cum laude, GPA: 29.76 out of 30 • Completed the five year program in 4 and a half years Thesis title: "Design of web-based vertical solutions" Advisor: Prof. Piero Fraternali
09/2000-06/2001	One year of study abroad within the SOCRATES/ERASMUS Exchange program at the Brunel University, Uxbridge, West London, UK

RESEARCH ACTIVITIES

My research activities are currently focused on the processing of multimedia data (e.g. audio, image and video signals), backed by the principles of information theory and machine learning. On one side, information theory enables a compact, non-redundant, representation of data; on the other side machine learning algorithms are adopted to extract the content-based semantics from multimedia data. Recently, I have also started a research line in bioinformatics, targeting data mining and knowledge discovery in databases containing functional annotations of genes and gene products, and search computing, addressing cost-driven aggregation of rankings from heterogeneous search services.

IMAGE AND VIDEO PROCESSING

The activities in the area of image and video processing are carried out in cooperation with the Image and Sound Processing Group (ISPG) at the Dipartimento di Elettronica e Informazione – Politecnico di Milano, led by Prof. Tubaro.

- Authentication and tampering detection [A.9., A.7., C.59., C.54., C.47., C.42.]
  With the overwhelming diffusion of multimedia contents, protecting the authenticity and the integrity from undesired manipulations has become an increasingly important research theme. The research activities are organized in two areas. On one side, we have been investigating the problem of tampering detection and identification for audio-visual data based on hashing techniques. On the other side we have been investigating the problem of reconstructing the past history of visual contents, exploiting the "footprints" left by acquisition and coding systems.

- Video quality assessment [A.10, A.8., C.57., C.55., C.50., C.48., C.46., C.45.]
  Video data represents the large part of the traffic on the Internet. Therefore, there is a strong demand for automatic mechanisms able to evaluate the playout quality of video sequences at the clients. This is especially important when video streams are transmitted over best-effort networks and the quality of service cannot be guaranteed. We have investigated the problem of video quality assessment both in a no-reference (i.e. the original video sequence is not available) and in a reduced-reference (i.e. a small size auxiliary stream accompanies the main video stream) scenario. We have developed objective quality metrics that are well correlated with the perceptual quality of impaired video. We have made available to the research community the data collected during an extensive subjective evaluation campaign.

- Video analysis [A.11., C.52.]
  In a conventional imaging setting, smart cameras operate by transmitting the video content to a base station, where the video sequence is first decoded and then processed to extract meaningful information (e.g. motion detection, object tracking, etc.). Supported by the recent findings in the area of compressive sensing, i.e. that signals can be reconstructed from a limited number of random measurements, we are investigating a new paradigm to perform video analysis without the need for reconstructing the video sequence beforehand. Although this seems to be counterintuitive, it is relevant when the imaging system acquires directly random measurements of the scene, a solution that is being shown to be effective to reduce costs of cameras operating at non-optical wavelengths (e.g. infrared, gamma rays, etc.). We have also extended this framework to target privacy-enabled coding of video data.

AUDIO PROCESSING

The research activities on audio processing are carried out at the premises of the Sound and Music Computing lab (Como Campus – Politecnico di Milano), where I coordinate, together with Prof. Sarti, a research group of five people, including Ph.D. students and research assistants.

- Self-calibration of acoustic cameras [C.56., C.53.]
  Working with multiple microphone arrays requires knowing the relative positioning of each array in the 3D space. By exploiting concepts from the computer vision literature, we have defined the notion of acoustic camera, and addressed the problem of self-calibrating multiple acoustic cameras while minimizing the amount of data exchange between each camera. Both far-field and near-field conditions have been addressed.

SEARCH COMPUTING

Search computing is a new multi-disciplinary science which will provide the abstractions, foundations, methods, and tools required to answer multi-domain queries. The activities in the area of search computing are carried out in cooperation with the database group at the Dipartimento di Elettronica e Informazione – Politecnico di Milano, led by Prof. Ceri.

- Rank aggregation for search computing [B.4., C.51, C.58.]
  When the result of a search query stems from the aggregation of results produced by multiple search services, it is important to find the optimal access plan to fetch data from the individual services. As part of the research on search computing, we have been investigating the problem of joining heterogeneous services to answer complex queries taking into account service access costs.

BIOINFORMATICS

The activities in the area of bioinformatics are carried out in cooperation with the database group at the Dipartimento di Elettronica e Informazione – Politecnico di Milano, led by Prof. Ceri.

- Data analysis algorithms in gene annotation databases [B.3., C.49., C.60.]
  Gene annotation databases are widely used as public repositories of biological knowledge. Gene and gene products are annotated with terms taken from unstructured controlled vocabularies or semantically structured ontologies (e.g. the Gene Ontology). We are developing a system which is meant to integrate available data sources providing functional annotations of genes and gene products. In this context, we have developed novel algorithms for automatically predicting newly inferred annotations based on the functional similarity between Gene Ontology terms.

PAST RESEARCH ACTIVITIES

VIDEO PROCESSING

- Distributed video coding [A.5., A.3., A.1., C.44., C.34., C.33., C.28., C.26., C.24., C.23., C.22., C.21., C.17., C.16., C.15., C.14., C.13., C.12., C.10., C.9., C.8., C.7., C.6.]
  Distributed video coding is a recent coding paradigm that enables a flexible distribution of the computational complexity between encoder and decoder, by moving part of the motion estimation task at the decoder. The research has focused on several aspects related to distributed video coding: improving the coding efficiency of state-of-the-art coding architectures, removing some issues that prevented such coding architectures from being applied in practical scenarios; studying the rate-distortion performance of distributed video coding and comparing it with conventional motion-compensated predictive codecs. The research activities have also addressed how to exploit distributed video coding to enhance the robustness with respect to packet losses.

- Non-normative tools for video coding [A.6., A.4., B.2., B.1., C.38., C.36., C.35., C.32., C.18., C.11., C.2.]
  In order to ensure interoperability, video coding standards define only the syntax of the bitstream and how to perform decoding. Several components are not specified by the standards, including motion estimation, rate allocation, rate control, error concealment, etc. The research has focused on non-normative tools for the state-of-the-art H.264/AVC video coding standard, with particular emphasis on error resilience and rate control.

- Scalable video coding [A.2., C.5., C.4., C.3.]
  When video contents are distributed over heterogeneous networks and devices it is desirable to adapt the bitstream to the characteristics of the receiving device. Scalable video coding enables bitstream adaptation without the need of transcoding, i.e. partial decoding followed by re-encoding. The bitstream corresponding to the desired frame-rate, spatial resolution and quality can be readily extracted from the original bitstream. The research has focused on wavelet-based scalable video coding techniques, somewhat extending the ideas of JPEG2000 to video signals, and it has led to several contribution to the MPEG, involved in the standardization of a scalable video codec.

AUDIO PROCESSING

- Acoustic source localization and tracking [C.41., C.40., C.39., C.30., C.29., C.27., C.25., C.20., C.19.]
  The information about the type of acoustic event can be augmented by the location of the source by space-time processing of signals collected with microphone arrays. We have been working on the problem of acoustic source localization and tracking, especially when more than one source is active at the same time.

- Audio classification [C.31., C.27.]
  The goal of this research line is to detect the onset of anomalous events (e.g. gunshots, screams, etc.) in audio streams collected by environmental microphones. The research is proceeding towards modelling the temporal evolution of acoustic features extracted from the audio streams, in order to detect aggressions in public spaces for security applications.

RESEARCH PROJECTS, GRANTS AND FUNDING

2010-2011 Project partner of the PRIN National project funded by the Italian Government on the topic: Streaming techniques for video over peer-to-peer networks".

2009-2010 Co-coordinator of the LAURA project (Localization And Ubiquitous monitoRing of pAtients for health care support) funded by Politecnico di Milano, young researcher grant - 5 per mille programme.

2009-2011 Co-coordinator of the SCENIC project (Self configuring environment aware intelligent acoustic sensing) - ICT FET-Open Call, 7th framework programme.

2009-2010 Co-coordinator in the research contract on video quality assessment with Fastweb

2008-2009 Co-coordinator in the research contract on automatic aggression detection with Keesquare

2008 Co-coordinator in the research contract on automatic speaker recognition in telephone conversations (details undisclosed for NDA clause)

2008 Co-coordinator in the research contract on the scalable extension of the H.264/AVC video coding standard with Telecom Italia

2007-2008 Co-coordinator in the research contract on automatic classification and localization of acoustic events with Keesquare

2006-2009 Project partner of the Network of Excellence VISNET-II funded under the 6th framework program on the topic networked audiovisual media technologies.

2005-2006 Project partner of the PRIN National project funded by the Italian Government on the topic: *Robust video coding techniques based on Distributed Source Coding*".

2004-2006 Project partner of the Network of Excellence VISNET funded under the 6th framework program on the topic *networked audiovisual media technologies*.

2003-2004 Investigator in the research contract on *wavelet-based scalable video coding* with Telecom Italia Lab.

2001-2003 Investigator in the research project WebML – Web Modeling Language with Politecnico di Milano.

PUBLICATIONS

INTERNATIONAL JOURNAL PAPERS

Year 2010

A.11. COSSALTER M., TAGLIASACCHI M., VALENZISE G., TUBARO S., "Joint compressive video coding and analysis". IEEE Transactions on Multimedia, vol. 12, n. 3, 2010, doi 10.1109/TMM.2010.2041105

A.10. TAGLIASACCHI M., VALENZISE G., NACCARI M., TUBARO S., "A reduced-reference structural similarity approximation for videos corrupted by channel errors". Springer Multimedia Tools and Applications, January 2010, doi 10.1007/s11042-010-0473-7

Year 2009

A.9. TAGLIASACCHI M., VALENZISE G., TUBARO S., "Hash-based identification of sparse image tampering". IEEE Transactions on Image Processing, vol. 18, n. 11, p. 2491-2504, November 2009, doi:10.1109/TIP.2009.2028251

A.8. NACCARI M., TAGLIASACCHI M., TUBARO S., "No-reference video quality monitoring of H.264/AVC coded video", IEEE Transactions on Multimedia, vol. 11; n. 11, p. 932-946, 2009, doi:10.1109/TMM.2009.2021785

A.7. VALENZISE G., PRANDI G., TAGLIASACCHI M., "Identification of sparse audio tampering using distributed source coding and compressive sensing techniques". EURASIP Journal on Image and Video Processing, Volume 2009, Article ID 158982, doi:10.1155/2009/158982

Year 2008

A.6. TAGLIASACCHI M., VALENZISE G., TUBARO S., "Minimum Variance Optimal Rate Allocation for Multiplexed H.264/AVC Bitstreams". IEEE Transactions on Image Processing, vol. 17; p. 1129-1143, 2008; doi:10.1109/TIP.2008.924278

A.5. BERNARDINI R., NACCARI M., RINALDO R., TAGLIASACCHI M., TUBARO S., ZONTONE P., "Rate allocation for robust video streaming based on distributed video coding". Signal Processing-Image Communication, vol. 23; 2008; p. 391-403, doi:10.1016/j.image.2008.04.004

Year 2007

A.4. TAGLIASACCHI M., "A Genetic Algorithm for Optical Flow Estimation". Image And Vision Computing, vol. 25; p. 141-147, 2007, doi:10.1016/j.imavis.2006.01.021

A.3. TAGLIASACCHI M., TUBARO S., FRIGERIO L., "Rate-distortion analysis of motion-compensated interpolation at the decoder in Distributed Video Coding". IEEE Signal Processing Letters, vol. 14; p. 625-628, 2007, doi: 10.1109/LSP.2007.896187

Year 2006

A.2. TAGLIASACCHI M., MAESTRONI D., TUBARO S., SARTI A. "Motion Estimation and Signaling Techniques for 2D+t Scalable Video Coding". Applied Signal Processing, vol. 2006; p. 1-21, doi: 10.1155/ASP/2006/57308

A.1. TAGLIASACCHI M., MAJUMDAR A., RAMCHANDRAN K., TUBARO S., "Robust Wireless Video Multicast based on a Distributed Source Coding Approach". Signal Processing, vol. 86; p. 3196-3211, 2006, doi: 10.1016/j.sigpro.2006.03.024

CHAPTERS IN INTERNATIONAL BOOKS

B.4. ILYAS I., MARTINENGHI D., TAGLIASACCHI M., "Chapter 11: Rank-join algorithms for Search Computing". In: Brambilla M and Ceri S, editors. Search Computing – Challenges and Directions. Vol. 5950 of LNCS. Springer, March 2010

B.3. MASSEROLI M., TAGLIASACCHI M., "Chapter XXVIII: Web resources for gene list analysis in biomedicine". In: Lazakidou AA, editor. Web-based Applications in Health Care and Biomedicine. Berlin, D: Springer; (in stampa). (Annals of Information Systems Series).

B.2. FUMAGALLI M., TAGLIASACCHI M., TUBARO S., "Expected distortion of DCT coefficients in video streaming over unrealiable channel". Lecture Notes in Computer Science. vol. 3893, p. 1-8, 2006, ISBN/ISSN: 978-3-540-33578-8, doi:10.1007/11738695

B.1. TAGLIASACCHI M. "Optical flow estimation using genetic algorithms." Lecture Notes in Computer Science. vol. 2955, p. 309-316, 2006, ISBN/ISSN: 978-3-540-31019-8, doi:10.1007/10983652

PAPERS IN PROCEEDINGS OF INTERNATIONAL CONFERENCES

Year 2010

C.60. TAGLIASACCHI M., MASSEROLI M., "Prediction of Gene Ontology annotations based on gene functional clustering", IEEE International Conference on Bioinformatics and Bioengineering, Philadelphia, USA, June 2010

C.59. TAGLIASACCHI M., TUBARO S., "Blind estimation of the QP parameter in H.264/AVC decoded video", International Workshop on Image Analysis for Multimedia Interactive Services, Desenzano sul Garda, Italy, April 2010

C.58. MARTINENGHI D., TAGLIASACCHI M., CERI S., "Top-k pipe-join", International Workshop on Ranking in Databases, Long Beach, USA, March 2010

C.57. DE SIMONE F., NACCARI M., TAGLIASACCHI M., TUBARO S., EBRAHIMI T., "A H.264/AVC video database for the evaluation of quality metrics", IEEE International Conference on Acoustics, Speech and Signal Processing. Dallas, USA, March 2010

C.56. VALENTE S.D., ANTONACCI F., TAGLIASACCHI M., SARTI A., TUBARO S., "Self-calibration of two microphone arrays from volumetric acoustic maps in non-reverberant rooms", International Symposium on Communications, Control and Signal Processing, Limassol, Cyprus, March 2010.

Year 2009

C.55. NACCARI M., TAGLIASACCHI M., TUBARO S., "Subjective evaluation of a no-reference video quality monitoring algorithm for H.264/AVC video over a noisy channel", IEEE International Conference on Image Processing, Cairo, Egypt, November 2009

C.54. VALENZISE G., TAGLIASACCHI M., TUBARO S., CANCELLI G., BARNI M., "A compressive-sensing based watermarking scheme for sparse image tampering identification", IEEE International Conference on Image Processing, Cairo, Egypt, November 2009

C.53. REDONDI A., TAGLIASACCHI M., ANTONACCI F., SARTI A., "Geometric calibration of distributed microphone arrays", IEEE International Workshop on Multimedia Signal Processing, Rio de Janeiro, Brasil, October 2009, p. 1-5, doi: 10.1109/MMSP.2009.5293568

C.52. COSSALTER M., VALENZISE G., TAGLIASACCHI M., TUBARO S., "Privacy-enabled object tracking in video sequences using compressive sensing", IEEE International Conference on Advanced Video and Signal based Surveillance, Genova, Italy, September 2009, p. 436-441, doi: 10.1109/AVSS.2009.13

C.51. BARBIERI D., BOZZON A., BRAGA D. M., BRAMBILLA M., CAMPI A., CERI S., DELLA VALLE E., FRATERNALI P., MARTINENGHI D., RONCHI S., TAGLIASACCHI M., "Data-driven optimization of search services composition for answering multi-domain queries", International Workshop on Using Search Engine Technology for Information Management, Lyon, France, August 2009, p. 1-8

C.50. DE SIMONE F., NACCARI M., TAGLIASACCHI M., DUFAUX F., TUBARO S., EBRAHIMI T., "Subjective assessment of H.264/AVC video sequences transmitted over a noisy channel", International Workshop on Quality of Multimedia Experience, San Diego, USA, July 2009, p. 204-209, doi:10.1109/QOMEX.2009.5246952

C.49. TAGLIASACCHI M., MASSEROLI M., "Anomaly-free prediction of gene ontology annotations using Bayesian networks", IEEE International Conference on Bioinformatics and Bioengineering, Taichung, Taiwan, June 2009, p. 107-114, doi:10.1109/BIBE.2009.7

C.48. ALBONICO A., VALENZISE G., NACCARI M., TAGLIASACCHI M., TUBARO S., "A reduced-reference video structural similarity metric based on no-reference estimation of the channel-induced distortion". IEEE International Conference on Acoustics, Speech and Signal Processing. Taipei, Taiwan, April 2009, doi:10.1109/ICASSP.2009.4959969

Year 2008

C.47. TAGLIASACCHI M., VALENZISE G., TUBARO S., "Localization of sparse image tampering via random projections". IEEE International Conference on Image Processing. San Diego, USA, October 2008, doi: 10.1109/ICIP.2008.4712199

C.46. NACCARI M., TAGLIASACCHI M., PEREIRA F., TUBARO S., "No-reference modeling of the channel induced distortion at the decoder for H.264/AVC video coding". IEEE International Conference on Image Processing. San Diego, USA, October 2008, doi: 10.1109/ICIP.2008.4712257

C.45. VALENZISE G., NACCARI M., TAGLIASACCHI M., TUBARO S., "Reduced-Reference Estimation of Channel-Induced Video Distortion using Distributed Source Coding". ACM Multimedia. Vancouver, October 2008, http://doi.acm.org/10.1145/1459359.1459483

C.44. PEREIRA F., BRITES C., ASCENSO J., TAGLIASACCHI M., "Wyner-Ziv video coding: a review of the early architectures and further developments". IEEE International Conference on Multimedia & Expo. Shanghai, China, July 2008, doi: 10.1109/ICME.2008.4607512

C.43. NACCARI M., TAGLIASACCHI M., TUBARO S., ZONTONE P., RINALDO R., BERNARDINI R. "Forward error protection for robust video streaming based on distributed video coding principles", International Conference on Visual Information Engineering, Xian, China, July 2008, pp. 747- 752

C.42. PRANDI G., VALENZISE G., TAGLIASACCHI M., SARTI A., "Detection and identification of sparse audio tampering using distributed source coding and compressive sensing techniques." International Conference on Digital Audio Effects. Espoo, Finland, September 2008

C.41. PRANDI G., VALENZISE G., TAGLIASACCHI M., ANTONACCI F., SARTI A., TUBARO S., "Acoustic Source Localization by Fusing Distributed Microphone Arrays Measurements." EURASIP European Signal Processing Conference. Losanne, Switzerland, August 2008

C.40. PAGANI P., RIVA D., ANTONACCI F., PRANDI G., TAGLIASACCHI M., SARTI A., TUBARO S., "Efficient Interferer Cancelation based on Geometrical Information of the Reverberant Environment". EURASIP European Signal Processing Conference. Losanne, Switzerland, August 2008

C.39. VALENZISE G., PRANDI G., TAGLIASACCHI M., SARTI A., "Resource constrained efficient acoustic source localization and tracking using a distributed network of microphones". IEEE International Conference on Acoustics, Speech and Signal Processing. Las Vegas, April 2008, p. 2581-2584, doi: 10.1109/ICASSP.2008.4518176

C.38. VALENZISE G., TAGLIASACCHI M., TUBARO S., "Minimum variance multiplexing of multimedia objects". IEEE International Conference on Acoustics Speech and Signal Processing. Las Vegas, April 2008, p. 1133-1136, doi: 10.1109/ICASSP.2008.4517814

C.37. BOZZON A., PRANDI G., VALENZISE G., TAGLIASACCHI M., "A music recommendation system based on semantic audio segments similarity". Internet and Multimedia Systems and Applications. Innsbruck, Austria, March 2008

Year 2007

C.36. NACCARI M., BRESSAN G.,; TAGLIASACCHI M., PEREIRA F., TUBARO S., "Unequal error protection based on flexible macroblock ordering for H.264/AVC video transcoding". Picture Coding Symposium. Lisbon, Portugal, November 2007, p. 1-4

C.35. VALENZISE G., TAGLIASACCHI M., TUBARO S., PICCARRETA L . "A rho-domain rate controller for multiplexed video sequences". Picture Coding Symposium. Lisbon, Portugal, November 2007, p. 1-4

C.34. TAGLIASACCHI M., FRIGERIO L., TUBARO S., "Analysis of coding efficiency of motion-compensated interpolation at the decoder in distributed video coding". IEEE International Conference on Image Processing. Atlanta, USA, September 2007, vol. 3, p. III-1-III-4, doi:10.1109/ICIP.2007.4379231

C.33. TAGLIASACCHI M., PRANDI G., TUBARO S., "Symmetric distributed coding of stereo video sequences". IEEE International Conference on Image Processing. Atlanta, USA, September 2007, vol. 2, p. II-29-II-32, doi:10.1109/ICIP.2007.4379084

C.32. VALENZISE G., TAGLIASACCHI M., TUBARO S.,"A Smoothed, Minimum Distortion-Variance Rate Control Algorithm for Multiplexed Transcoded Video Sequences". ACM Multimedia - Mobile Video Workshop. Augsburg, Germany, September 2007, doi.acm.org/10.1145/1290050.1290063

C.31. GEROSA L., VALENZISE G., TAGLIASACCHI M., ANTONACCI F., SARTI A., "Scream and Gunshot Detection and Localization for Audio-Surveillance Systems". IEEE International Conference on Advanced Video and Signal based Surveillance. London, UK, September 2007, p. 21-26, doi:10.1109/AVSS.2007.4425280

C.30. ANTONACCI F., RIVA D., SARTI A., TAGLIASACCHI M., TUBARO S., "Tracking of two acoustic sources in reverberant environment using a particle swarm optimizer". IEEE International Conference on Advanced Video and Signal based Surveillance. London, September 2007, p. 567-572, doi:10.1109/AVSS.2007.4425373

C.29. ANTONACCI F., RIVA D., TAGLIASACCHI M., SARTI A. "Efficient Localization and Tracking of Two Acoustic Sources using Particle Filters with Swarm Intelligence". EURASIP European Signal Processing Conference. Poznan, Poland, September 2007, p. 1-4

C.28 BERNARDINI R., FUMAGALLI M., NACCARI M., RINALDO R., TAGLIASACCHI M., TUBARO S., ZONTONE P., "Error concealment using a DVC approach for video streaming applications". EURASIP European Signal Processing Conference. Poznan, Poland, September 2007, p. 1-4

C.27. GEROSA L., VALENZISE G., ANTONACCI F., TAGLIASACCHI M., SARTI A., "Scream and gunshot detection in noisy environments". EURASIP European Signal Processing Conference. Poznan, Poland, September 2007, p. 1-4

C.26. TAGLIASACCHI M., PEDRO J., PEREIRA F., TUBARO S.,. "An efficient request stopping method at the turbo decoder in distributed video coding". EURASIP European Signal Processing Conference. Poznan, Poland, September 2007, p. 1-4

C.25. ANTONACCI F., MATTEUCCI M., MIGLIORE D., RIVA D., SARTI A., TAGLIASACCHI M., TUBARO S., "Tracking multiple acoustic sources in reverberant environments using regularized particle filter". International Conference on Digital Signal Processing. Cardiff, UK, July 2007, p. 99-102, doi:10.1109/ICDSP.2007.4288528

C.24. TAGLIASACCHI M., TUBARO S., "Hash-based motion modeling in Wyner-Ziv video coding". IEEE International Conference on Acoustics, Speech and Signal Processing. Honolulu, USA, April 2007, vol. 1, p. I-509-I-512, doi:0.1109/ICASSP.2007.366728

Year 2006

C.23. FOWLER J.E., TAGLIASACCHI M., PESQUET-POPESCU B., "Video coding with wavelet-domain conditional replenishment and unequal error protection". IEEE International Conference on Image Processing. Atlanta, USA, October 2006, p. 1869-1872, doi:10.1109/ICIP.2006.313100

C.22 TAGLIASACCHI M., TUBARO S., SARTI A., "On the modeling of motion in Wyner-Ziv video coding". IEEE International Conference on Image Processing. Atlanta, USA, October 2006, p. 593-596, doi:10.1109/ICIP.2006.312405

C.21. TAGLIASACCHI M., TRAPANESE A., TUBARO S., ASCENSO J., BRITES C., PEREIRA F., "Exploiting spatial redundancy in pixel domain Wyner-Ziv video coding". IEEE International Conference on Image Processing. Atlanta, USA, October 2006, p. 253-256, doi: 10.1109/ICIP.2006.313173

C.20. ANTONACCI F., RIVA D., SAIU D., SARTI A., TAGLIASACCHI M., TUBARO S., "Tracking Multiple Acoustic Sources using Particle Filtering". EURASIP European Signal Processing Conference. Firenze, Italy, September 2006

C.19. ANTONACCI F., SAIU D., RUSSO P., SARTI A., TAGLIASACCHI M., TUBARO S . "Experimental evaluation of a localization algorithm for multiple acoustic sources in reverberating environments". EURASIP European Signal Processing Conference. Firenze, Italy, September 2006

C.18. TAGLIASACCHI M., SARCHI M; TUBARO S . "Motion estimation based on quadtree pruning and merging". IEEE International Conference on Multimedia and Expo. Toronto, Canada, July 2006, p. 1861-1864, doi:10.1109/ICME.2006.262917

C.17. ARTIGAS X., TAGLIASACCHI M., TORRES L., TUBARO S., "A proposal to suppress the training stage in a coset-based distributed video codec". IEEE International Conference on Acoustics, Speech and Signal Processing. Toulouse, France, May 2006, vol. 2, p. II-1-II-4, doi:10.1109/ICASSP.2006.1660394

C.16. FUMAGALLI M., TAGLIASACCHI M., TUBARO S., "Improved bit allocation in an error resilient scheme based on distributed video coding". IEEE International Conference on Acoustics, Speech and Signal Processing. Toulouse, France, May 2006, vol. 2, p. II-1-II-4, doi:10.1109/ICASSP.2006.1660279

C.15. TAGLIASACCHI M., TRAPANESE A., TUBARO S., ASCENSO J., BRITES C., PEREIRA F., "Intra mode decision based on spatio-temporal cues in pixel-domain Wyner-Ziv video coding". IEEE International Conference on Acoustics, Speech and Signal Processing. Toulouse, France, May 2006, vol. 2, p. II-1-II-4, doi:10.1109/ICASSP.2006.1660278

Year 2005

C.14. TAGLIASACCHI M., TUBARO S., SARTI A., "Combining MCTF with distributed source coding". IEEE International Conference on Image Processing. Genova, Italy, September 2005, vol. 1, p. 797-800, doi:10.1109/ICIP.2005.1529871

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C.12. TRAPANESE A., TAGLIASACCHI M., TUBARO S., ASCENSO J., BRITES C., PEREIRA F., "Embedding a block-based intra mode in frame-based pixel domain Wyner-Ziv video coding". International Workshop on Very Low Bitrate Video. Costa Rei, Italy, September 2005, p. 1-4

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C.10. FOWLER J., TAGLIASACCHI M., PESQUET-POPESCU B., "Wavelet-based distributed source coding of video". EURASIP European Signal Processing Conference. Antalya, Turkey, September 2005, p. 1-4

C.9. TOFFETTI G; TAGLIASACCHI M., MARCON M., SARTI A., TUBARO S., RAMCHANDRAN K.,"Image compression in a multi-camera system based on a distributed source coding approach". EURASIP European Signal Processing Conference. Antalya, Turkey, September 2005, p. 1-4

C.8. TAGLIASACCHI M., MAESTRONI D., TUBARO S., "In-band adaptive update step based on local content activity". SPIE Visual Communication and Image Processing. Beijing, China, July 2005, p. 1-4

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C.6. TAGLIASACCHI M., MAJUMDAR A., RAMCHANDRAN K ., "A distributed source coding based spatio-temporal scalable video codec". Picture Coding Symposium. San Francisco, USA, December 2004, p. 1-4

C.5. MAESTRONI D., SARTI A., TAGLIASACCHI M., TUBARO S . "Fast in-band motion estimation with variable size block matching". IEEE International Conference on Image Processing. Singapore, October 2004, vol. 4, p. 2287-2290, doi:10.1109/ICIP.2004.1421555

C.4. MEASTRONI D; SARTI A., TAGLIASACCHI M., TUBARO S . "Scalable coding of variable size blocks motion vectors". IEEE International Conference on Image Processing. Singapore, 24-27 October 2004, vol. 2, p. 1333-1336, doi:10.1109/ICIP.2004.1419745

C.3. MAESTRONI D., SARTI A., TAGLIASACCHI M., TUBARO S., "Wavelet-based video coding: optimal use of motion information for the decoding of spatially scaled video sequences". EURASIP European Signal Processing Conference. Vienna, Austria, September 2004, p. 1-4

Year 2003

C.2. TAGLIASACCHI M., "Optical flow estimation using genetic algorithms". International Workshop on Fuzzy Logic. Napoli, Italy, October 2003, p. 1-4

C.1. CERI S., FRATERNALI P., BONGIO A., BUTTI S., ACERBIS R., TAGLIASACCHI M., TOFFETTI G., CONSERVA C., ELLI R., CIAPESSONI F., GREPPI C ., "Architectural issues and solutions in the development of data-intensive web applications". Conference on Innovative Data Systems Research. Asilomar, USA, January 2003, p. 1-4

PAPERS IN PROCEEDINGS OF NATIONAL CONFERENCES

N.2. BRAGA D.M., BRAMBILLA M., CAMPI A., CERI S., DANIEL F., DELLA VALLE E., FRATERNALI P., MARTINENGHI D., TAGLIASACCHI M., "Search Computing: a European research for querying the web", Italian Symposium on Advanced Database Systems, Camogli, Italy, June 2009, p. 57-64

N.1. TAGLIASACCHI M., MASSEROLI M., "Improved Gene Ontology annotation predictions through Bayesian network post-processing". Sixth Annual Meeting of the Bioinformatics Italian Society, Genova, Italy, March 2009

THESIS

D.2. TAGLIASACCHI, M. "Advanced scalable video coding techniques". Ph.D. Thesis, Dipartimento di Elettronica e Informazione, Politecnico di Milano, Italy

D.1. TAGLIASACCHI, M. "Designing web based vertical solutions". M.Sc. Thesis, Politecnico di Milano, Italy

PATENTS

P.1. Patent N. PCT/EP2006/006393. "Method, apparatus and system for robust video transmission"; Filed: July, 5th 2006.

P.2. Patent N. MI2004A000126. "Metodo e sistema per la stima del moto tra una immagine corrente ed una immagine precedente di un segnale video – (Method for motion estimation between the current and previous frame in a video sequence"; Filed: January,29th 2004.

INVITED TALKS

Compressive Sensing: basic principles and applications in image and video processing, tutorial talk, *International Workshop on Image Analysis for Multimedia Interactive Services*, Desenzano sul Garda, April 2010

Quality assessment of H.264/AVC video streaming with packet losses, *ACM Multimedia Technical Committee Workshop*, New York, June 2009

Video coding based on distributed source coding principles, *MPEG Workshop on Future Video Technologies*, Busan, South Korea, April 2005

AWARDS

Top-10% paper award at the *IEEE International Workshop on Multimedia Signal Processing* 2009 for the work C.50

Best Student Paper Award at the *International Workshop on Quality of Multimedia Experience 2009* for the work C.52

SCIENTIFIC VOLUNTEER WORK

Reviewer for the following international journals:

- IEEE Transaction on Image Processing
- IEEE Transactions on Multimedia
- IEEE Transaction on Circuit and Systems for Video Technology
- IEEE Signal Processing Letters
- Signal Processing: Image Communication
- Image and Vision Computing, Elsevier

Member of the organizing committee of the following conferences:

- ACM/IEEE ICDSC 2009 (International Conference on Distributed Smart Cameras)
- DAFX 2009 (International Conference on Digital Audio Effects)

Member of the technical committee of the following conferences:

- ACM Multimedia 2009, 2010
- IEEE Multimedia Signal Processing (MMSP) 2009, 2010
- IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2010
- Digital Audio Effects (DAFX) 2009

TEACHING ACTIVITIES

COURSES

Since 10/2009	Multimedia Information Retrieval (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
Since 10/2009	Multimedia Signal Processing – Part II (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
Since 03/2009	Laboratorio di Sviluppo Progetto – (M.Sc. in Communication Design, Politecnico di Milano)
10/2006-09/2009	Fundamentals of Audio/Video Signal Processing (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
10/2006-09/2009	Digital Audio/Video Signal Processing (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
03/2006-09/2009	Advanced Digital Image Processing Project (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
10/2007-09/2008	Computer Science (B.Sc. in Design, Politecnico di Milano)

TEACHING ASSISTANTSHIPS

10/2009-02/2010	Bioinformatica e Biologia Computazionale per la Medicina Molecolare. (M.Sc. in Computer Engineering, Politecnico di Milano)
10/2005-09/2007	Methods and Technologies for Image Processing (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano, course taught in English)
03/2007-02/2008	Web Technologies (online B.Sc. in Computer Engineering, Politecnico di Milano)
03/2003-02/2007	Information Systems (online B.Sc. in Computer Engineering, Politecnico di Milano)
10/2003-09/2006	Digital Audio/Video Signal Processing (M.Sc. in Computer Engineering, Como Campus, Politecnico di Milano)
03/2003-09/2003	Information Systems (B.Sc. in Computer Engineering, Como Campus, Politecnico di Milano)
10/2002-09/2004	Computer Science (B.Sc. in Design, Politecnico di Milano)
05/2002	Web design laboratory (M.Sc. in Design, Politecnico di Milano)

PROFESSIONAL ACTIVITIES

10/2001-03/2003	Software engineer at WebRatio, a spin-off of the Politecnico di Milano. Developed modules of a CASE (Computer-Aided Software Engineering) tool, specifically designed for database driven Web applications