

CURRICULUM VITAE

FABRIZIO GUERRINI

BASIC INFORMATION

Name: Fabrizio Guerrini
Date of birth: December 11, 1979
Place of birth: Brescia (BS)
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Formation:
 (2008) PhD in Information Engineering
 (2004) Degree in Electronic Engineering (cum laude)
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 Italian Mother tongue
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FORMATION AND TRAINING

From Aug.'17 Non-tenured researcher (RTD-A)
Department of Information Engineering (DII), University of
Brescia, Italy

Apr.'08-Jul.'17 Post-doctoral research assistant
Department of Information Engineering (DII), University of
Brescia, Italy

Mar.'05-Mar.'08 PhD in Information Engineering
Department of Information Engineering (DII), University of
Brescia, Italy
Thesis title: *Image Watermarking Robust Against Non-Linear
Attacks* (written in English)

Supervisor: Prof. Riccardo Leonardi
Focus: Image watermarking based on quantization index modulation applied to 4th-order statistical features extracted on random image patches.
Minor theme: binary classification using convex optimization.

Sept.'98-Oct.'04 Degree in Electronic Engineering (cum laude)
Department of Information Engineering (DII), University of Brescia, Italy
Thesis title: *Digital Image and Video Authentication Using Fingerprints*
Supervisor: Prof. Riccardo Leonardi
Focus: visual feature extraction for content-based hashing.

RESEARCH ACTIVITIES

- Major topics covered: visual feature extraction and processing. Research areas: digital watermarking, multidimensional scaling, high-dynamic range imaging, transform coding, interactive storytelling applied to video, multidimensional histogram distances.
- Currently working on searching symmetries in signals using a novel transform based on the even-odd decomposition of signals, and its extension to search for symmetric objects in digital images. Other current topics (among others): minimum information shift coding, hyperspectral volumes processing.
- Involved in the IRIS Network of Excellence funded by the European Commission (ended in 2011). Co-developed the Interactive Movietelling prototype (Interactive Storytelling applied to movies) and its theoretical framework, which has led to an international patent application, working on face detection, tracking and recognition for semi-automatic movie character labeling (2010-present).
- Participated to the MPEG Call for Proposals on Video Signature Tool, now part of the MPEG-7 standard, on behalf of the University of Brescia. Research in Content-Based Copy Detection (CBCD) focused on information fusion applied to visual features (2009-2010).
- Involved on the Dynamic TV project funded by Telecom Italia working on video segmentation, multimedia information retrieval and movie recommendation systems (2009).
- Assisted teaching of various courses pertaining fundamentals of Telecommunications: Communication Systems A.A. 2008/2009, Signals and Systems A.A. 2009/2010, 2010/2011, 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2016/2017 and 2017/2018, and Communication Networks A.A. 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018 and 2018/2019.

- Attended and lectured at various international conferences: European Signal Processing Conference 2005 and 2013, Wave 2006 Wavelets and Application Conference, International Conference on Acoustics, Speech and Signal Processing (ICASSP) 2007, International Conference on Immersive Communications (IMMERSCOM) 2007, International Workshop on Image and Audio Analysis for Multimedia Interactive Services (WIAMIS) 2010.
- Reviewed papers for international conferences: International Workshop on Image and Audio Analysis for Multimedia Interactive Services (WIAMIS), European Signal Processing Conference (EUSIPCO) and International Conference on Image Processing (ICIP). Reviewed papers for journals: IEEE Transactions on Circuits and Systems for Video Technology (TCSVT), IEEE Transactions on Image Processing, Pattern Recognition.

PUBLICATIONS

1. S. Benini, F. Guerrini, R. Leonardi, P. Migliorati, "Effective Image Fingerprint Extraction Based on Bubble Random Sampling", *Proc. 5th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS '04)*, April 2004, Lisbon, Portugal.
2. F. Guerrini, R. Leonardi, P. Migliorati, "Image Retrieval with Random Bubbles", *Proc. 12th European Signal Processing Conference (EUSIPCO '04)*, September 2004, Wien, Austria.
3. F. Guerrini, R. Leonardi, P. Migliorati, "A New Video Authentication Template Based on Bubble Random Sampling", *Proc. 13th European Signal Processing Conference (EUSIPCO '05)*, September 2005, Antalya, Turkey.
4. F. Guerrini, R. Leonardi, M. Barni, "Image Watermarking Robust Against Non-Linear Value-Metric Scaling Based on Higher Order Statistics", *Proc. 31st International Conference on Acoustics, Speech and Signal Processing (ICASSP '06)*, May 2006, Toulouse, France.
5. F. Guerrini, M. Okuda, N. Adami, R. Leonardi, "High Dynamic Range Image Watermarking", *Proc. 23rd International Technical Conference on Circuits/Systems, Computers and Communications (ITC-CSCC '08)*, July 2008, Shimonoseki, Japan.
6. Q. Zhang et. al, "COST292 experimental framework for TRECVID 2008", *TREC Video Retrieval Evaluation Online Proceedings (TRECVID)*, 2008.
7. M. Corvaglia, F. Guerrini, R. Leonardi, P. Migliorati, E. Rossi, "CBCD Based on Color Features and Landmark MDS-Assisted Distance Estimation", *Proc. 2010 International Conference on Acoustics, Speech and Signal Processing (ICASSP '10)*, March 2010, Dallas, TX, USA.
8. M. Corvaglia, F. Guerrini, R. Leonardi, P. Migliorati, E. Rossi, "Identification Versus CBCD: a Comparison of Different Evaluation Techniques", *Proc. 11th International Workshop on Image Analysis for Multimedia Interactive Services (WIAMIS '10)*, April 2010, Desenzano del Garda, Italy.
9. M. Corvaglia, F. Guerrini, R. Leonardi, P. Migliorati, E. Rossi, "Toward a Multi-Feature Approach to Content-Based Copy Detection", *Proc. 2010 International Conference on Image Processing (ICIP '10)*, September 2010, Hong Kong, China.
10. M. Corvaglia, F. Guerrini, R. Leonardi, P. Migliorati, E. Rossi, "Copy Detection of Immersed Content in Video Databases", *Proc. ACM Workshop on Multimedia in Forensics, Security and Intelligence (MiFor '10)*, October 2010, Florence, Italy.

11. F. Guerrini, M. Okuda, N. Adami, R. Leonardi, “High Dynamic Range Image Watermarking Robust Against Tone-Mapping Operators”, *IEEE Trans. on Information Forensics and Security*, Vol. 6, No. 2, pp. 283-295, June 2011.
12. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, J. Teutenberg, J. Porteous, and M. Cavazza, “Video-Based Recombination for New Media Stories”, *2011 EuroITV Grand Challenge*, 2nd prize (out of 21), Lisbon, Portugal, June 2011.
13. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, J. Porteous, J. Teutenberg, M. Cavazza, “Generating Story Variants with Constrained Video Recombination”, *ACM Multimedia Conference*, November 2011, Scottsdale, AZ, USA.
14. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, J. Porteous, J. Teutenberg, M. Cavazza, “Changing Video Arrangement for Constructing Alternative Stories”, *ACM Multimedia Conference (technical demo)*, November 2011, Scottsdale, AZ, USA.
15. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, “Markov Chains Fusion for Video Scenes Generation”, *Proc. 20th European Signal Processing Conference (EUSIPCO '12)*, pp. 405-409, August 2012, Bucharest, Romania.
16. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, “Improved Face Tracking Thanks to Local Features Correspondence”, *Proc. 21st European Signal Processing Conference (EUSIPCO '13)*, September 2013, Marrakech, Morocco.
17. A. Piacenza, F. Guerrini, N. Adami, R. Leonardi, “Movie Character Recognition for Interactive Video-Based Storytelling”, *Proc. IEEE Workshop on Multimedia Signal Processing*, October 2013, Pula, Italy.
18. A. Gnutti, F. Guerrini, R. Leonardi, “Representation of Signals by Local Symmetry Decomposition”, *Proc. IEEE 23rd European Signal Processing Conference (EUSIPCO '15)*, September 2015, Nice, France.
19. F. Guerrini, M. Okuda, N. Adami, R. Leonardi, “HDR Image Watermarking”, book chapter, *High Dynamic Range Video: Acquisition, Display and Applications* (edited by F. Dufaux, P. La Callet, R. Mantiuk and M. Mrak), Elsevier, pp. 561–589, 2016.
20. F. Guerrini, A. Gnutti, R. Leonardi, “Image Symmetries: The Right Balance between Evenness and Perception”, *Proc. 24th International Conference on Systems, Signals and Image Processing (IWSSIP '17)*, May 2017, Poznan, Poland.
21. A. Gnutti, F. Guerrini, R. Leonardi, “On Reflection Symmetry In Natural Images”, *Proc. 15th International Workshop on Content-Based Multimedia Indexing (CBMI '17)*, June 2017, Florence, Italy.

22. A. Gnutti, F. Guerrini, R. Leonardi, “A Normalized Mirrored Correlation Measure for Data Symmetry Detection”, *Proc. IEEE 25th European Signal Processing Conference (EUSIPCO '17)*, pp. 813–817, August 2017, Kos, Greece.
23. F. Guerrini, N. Adami, S. Benini, A. Piacenza, J. Porteous, M. Cavazza, R. Leonardi, “Interactive Film Recombination”, *ACM Trans. on Multimedia Computing, Communications and Applications (TOMM)*, Vol. 13, No. 4, p. 52, 2017.
24. F. Guerrini, A. Gnutti, R. Leonardi, “Even/Odd Decomposition Made Sparse: A Fingerprint to Hidden Patterns”, *Elsevier Signal Processing*, Vol. 141, pp. 273–286, 2017.
25. F. Guerrini, A. Gnutti, R. Leonardi, “InnerSpec: Technical Report”, *Proc. ICCV Workshop on Detecting Symmetry in the Wild*, October 2017, Venice, Italy.
26. F. Gringoli, N. Ali, F. Guerrini, P. Patras, “A Flexible Framework for Debugging IoT Wireless Applications”, *Proc. IEEE International Workshop on Metrology for Industry 4.0 and IoT*, pp. 230–235, April 2018, Brescia, Italy.
27. A. Signoroni, M. Savardi, M. Pezzoni, F. Guerrini, S. Arrigoni, G. Turra, “Combining the Use of CNN Classification and Strength-Driven Compression for the Robust Identification of Bacterial Species on Hyperspectral Culture Plate Images”, *IET Computer Vision*, Vol. 12, No. 7, pp. 941–949, 2018.
28. A. Gnutti, F. Guerrini, R. Leonardi, A. Ortega, “Symmetry-Based Graph Fourier Transforms for Image Representation”, *Proc. IEEE 25th International Conference on Image Processing (ICIP '18)*, pp. 2575–2579, October 2018, Athens, Greece.
29. F. Guerrini, A. Gnutti, R. Leonardi, “Introducing the Mirror Transform”, *Proc. 2019 International Conference on Acoustics, Speech and Signal Processing (ICASSP '19)*, May 2019, Brighton, UK.