

SHORT RESUME

ALEXIA BRIASSOULI

Personal data:

Home address: D 2007, Triadi 57001, Thessaloniki

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Date of birth: August 19, 1976

Education:

2001- 2005

Ph.D. in Electrical and Computer Engineering, University of Illinois, Urbana-Champaign

1999- 2001

Masters of Science, "Systems of Signal Processing and Communications: Theory, Implementations and Applications", Interdisciplinary Graduate Program of the Depts of Electrical Engineering and Computer Science, in collaboration with the Physics Dept of the University of Patras (9.55)

1994- 1999

Diploma of Electrical and Computer Engineering, National Technical University of Athens (8.68, Excellent)

Professional Experience:

2006- present

Postdoctoral Researcher, Informatics and Telematics Institute, ITI-CERTH

2006- present

Visiting Lecturer PD 407/80, University of Thessaly

2005-2006

Postdoctoral Researcher, University of Illinois, Urbana-Champaign

2001-2005

Research Assistant, University of Illinois, Urbana-Champaign

2000-2001

Research Assistant, Informatics and Telematics Institute, ITI-CERTH

1999-2000

Teaching Assistant, University of Patras

Teaching Experience:

Graduate (Dept of Computer Engineering, Telecommunications and Networks, University of Thessaly (2006-present):

- Image/Video Processing
- Advanced Topics in Digital Signal Processing

Undergraduate (Dept of Computer Engineering, Telecommunications and Networks, University of Thessaly (2006-present):

- Introduction to Signals and Systems
- Digital Image Processing
- Digital Signal Processing

Supervision of undergraduate theses (Dept of Computer Engineering, Telecommunications and Networks, University of Thessaly (2006-present):

1. "Adaptive Color Modelling for Background Detection and Tracking", Kapetanios Nikolaos (fall 2007).
2. "Hidden Markov Model background removal for event localization", Koutsautikis Dimitris (spring 2008).
3. "Advanced clustering techniques in images and videos", Sotiropoulos Kostas (spring 2008).
4. "Motion Estimation based on Mean Squared Error minimization of Fourier Phase", Koutsagia Despina (spring 2008).
5. "Transparent Object Motion Segmentation using Fourier Techniques", Xanthopoulou Parthena (spring 2008).
6. "Unsupervised State of the Art Color Segmentation and Segment-based Image Search", Poularakis Stelios (spring 2008).

Research Interests:

Watermarking techniques for images and video:

- Image processing, statistical image modeling
- Detection and Estimation theory for the robust embedding, detection and estimation of watermarks.
- Spectral data analysis for the design, embedding, detection and extraction of watermarks.
- Information theory in watermarking.

Video processing for motion estimation and segmentation using signal processing techniques:

- Fourier transform, Time-frequency distributions and spatial information for motion estimation, and segmentation.
- Blind deconvolution and inverse imaging methods applied to motion segmentation in the Fourier domain.

Event detection in video, change detection in images

- Change detection techniques, sequential video data processing using probability ratio testing, for real time change/unusual event detection
- Modeling of events using Hidden Markov Models for event detection, classification, retrieval.

Semantic Web:

- Extraction of color, texture, motion features from images, video for higher level semantics
- Data classification, high-level knowledge/semantics derivation through the combination of knowledge structures (ontologies), reasoning, multimedia features

New/current research interests:

- Image/video processing for single cell tracking
- One-dimensional signal processing (temperature measurements, pressure etc) and image/video processing (satellite images, video) for change detection, system anomaly localization, classification
- Astronomy image processing for the extraction, classification of galaxies, nebulae, stars, satellite paths

Reviewer for Journals, Conferences:

1. IEEE Transactions on Pattern Analysis and Machine Intelligence
2. IEEE Transactions on Circuits and Systems for Video Technology

3. IEEE Transactions on Image Processing
4. IEEE Transactions on Multimedia
5. Signal Processing (EURASIP)
6. EURASIP Journal on Information Security
7. International Conference on Image Processing (ICIP)
8. European Conference on Computer Vision (ECCV)
9. IEEE Conference on Computer Vision and Pattern Recognition (CVPR)
10. International Conference on Pattern Recognition (ICPR)

Fellowships-Awards:

2001- 2005

Research Assistant, University of Illinois, Urbana-Champaign

1999- 2001

Teaching Assistant, Πανεπιστήμιο Πατρών

Member of Professional Associations:

Member Institute of Electrical and Electronics Engineers (IEEE)

Member of the Technical Chamber of Greece (TEE)

Participation in Research Projects:

- Workpackage Leader, researcher: aceMedia "Integrating knowledge, semantics and content for user centred intelligent media services" (<http://acemedia.org/aceMedia>)
- Researcher: "ASPIS: An Authentication and Protection Innovative Software System for DVDROM and Internet" (<http://www.iti.gr/db.php/el/projects/ASPIS.html>)
- Researcher: "JUMAS - Judicial Management by Digital Libraries Semantics" (<http://www.iti.gr/db.php/el/projects/ASPIS.html>)

Programming languages, operating systems:

- C/C++, Matlab
- Windows, MAC OSX, Linux (Ubuntu, CentOS)

Languages spoken:

- Ελληνικά (native)
- Αγγλικά (native)
- Γαλλικά (very good)

Invited Talks:

- August 19, 2002: "Fourier Methods for Motion Analysis": Seminar in the Institute of Computer Science (ICS) of the Foundation for Research and Technology – Hellas (FORTH), University of Crete, Heraklion, Crete
- November 2, 2005: "Integration of Space and Frequency for Motion Estimation and Segmentation": Digital Signal Processing Seminar at the Beckman Institute, University of Illinois at Urbana-Champaign, Illinois, USA.

PUBLICATIONS

Dissertations/Theses:

1. PhD Dissertation: "Fusion of Frequency and Spatial Domain Information for Motion Analysis", Department of Electrical and Computer Engineering, University of Illinois at Urbana-Champaign, 2005.
2. Masters Thesis: "Hidden Messages in Heavy-Tails: DCT-Domain Watermark Detection Using Alpha-Stable Models", Interdisciplinary Graduate Program SESE, University of Patras, 2000.
3. Undergraduate Thesis: "Improving the 3D Reconstruction of Images from 2D Sequences of Video Frames in the Presence of Additive Noise", Dept of Electrical and Computer Engineering, National Technical University of Athens, 1999.

Books:

1. Dimitrios Simitopoulos, Alexia Briassouli and Michael G. Strintzis: "Robust Watermark Detection from Quantized MPEG Video Data", *Multimedia Security Handbook*, B. Fuhr and D. Kirovski Eds., CRC Press.
2. Vasileios Mezaris, Georgios Th. Papadopoulos, Alexia Briassouli, Ioannis Kompatsiaris, Michael G. Strintzis "Semantic Video Analysis and Understanding", *Encyclopedia of Information Science and Technology*, Second edition.

Journal Publications:

1. Alexia Briassouli, Vasileios Mezaris, Ioannis Kompatsiaris: "Accumulated Motion and Color Segmentation Fusion for Human Activity Analysis", *EURASIP Journal on Image and Video Processing*, to appear.
2. Alexia Briassouli, Vasileios Mezaris, Ioannis Kompatsiaris: "Color aided motion-segmentation and object tracking for video sequences semantic analysis", *International Journal of Imaging Systems and Technology (IJIST)*, Special Issue on Applied Color Image Processing, Volume 17, Issue 3, pp 174-189, 2007.
3. Alexia Briassouli and N. Ahuja: "Integration of Frequency and Space for Multiple Motion Estimation and Shape-Independent Object Segmentation", *IEEE Trans on Circuits, Systems and Video Technology*, to appear.
4. Alexia Briassouli and N. Ahuja: "Extraction and Analysis of Multiple Periodic Motions in Video Sequences", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Vol. 29, Issue 7, July 2007, pp. 1244-1261.
5. Alexia Briassouli and M. G. Strintzis: "Locally Optimum Nonlinearities for DCT Watermark Detection", *IEEE Trans. on Image Processing*, Vol. 13, Issue 12, Dec. 2004, pp. 1604-1617.
6. Alexia Briassouli and M. G. Strintzis: "Optimal Watermark Detection Under Quantization in the Transform Domain", *IEEE Trans. on Circuits, Systems and Video Technology*, Vol. 14, No. 12, Dec 2004, pp. 1308-1319.
7. Alexia Briassouli, Panagiotis Tsakalides (Member IEEE) and Athanasios Stouraitis (Senior Member IEEE): "Hidden Messages in Heavy-Tails: DCT-Domain Watermark Detection Using Alpha-Stable Models", *IEEE Transactions of Multimedia*, Vol. 7, Issue 4, Aug. 2005, pp. 700 – 715.
8. Dimitrios Simitopoulos, Sotirios A. Tsaftaris, Nikolaos V. Boulgouris, Alexia Briassouli, and Michael G. Strintzis, "Fast Watermarking of MPEG-1/2 Streams Using Compressed-domain Perceptual Embedding and a Generalized Correlator Detector", *EURASIP JASP*, 2004:8, pp 1088-1106.

Conference Publications:

1. Alexia Briassouli, Stamatia Dasiopoulou, Ioannis Kompatsiaris, "Ontology-Based Trajectory Analysis for Semantic Event Detection", IEEE International Conference on Semantic Computing (ICSC2007), Sept 2007.
2. Alexia Briassouli, Vasileios Mezaris, Ioannis Kompatsiaris, "Joint Motion and Color Statistical Video Processing for Motion Segmentation", IEEE International Conference on Multimedia and Expo (ICME), July 2007.
3. Alexia Briassouli, Vasileios Mezaris, Ioannis Kompatsiaris, "Video Segmentation and Semantics Extraction from the Fusion of Motion and Color Information", International Conference on Image Processing (ICIP) Sept. 2007.
4. Alexia Briassouli and Narendra Ahuja: "Spatial and Fourier Error Minimization for Motion Estimation and Segmentation", ICPR 2006.
5. Narendra Ahuja and Alexia Briassouli: "Joint Space-Frequency Processing for Motion Analysis", FG 2006, Proceedings of the 7th International Conference Automatic Face and Gesture Recognition, April 10-12, Southampton, UK.
6. Alexia Briassouli and Narendra Ahuja: "Estimation of Multiple Periodic Motions from Video", ECCV 2006, Proceedings of the 9th European Conference on Computer Vision, May 7 - 13, Graz, Austria.
7. Alexia Briassouli and Narendra Ahuja: "Integrated Spatial and Frequency Domain 2D Motion Segmentation and Estimation", ICCV 2005, Proceedings of the 10th International Conference on Computer Vision, Vol. 1, Oct. 15-20, Beijing, China, pp. 244 - 250.
8. Alexia Briassouli and Narendra Ahuja: "Fusion of frequency and spatial domain information for motion analysis", ICPR 2004, Proceedings of the 17th International Conference on Pattern Recognition, Vol. 2, Aug. 23-26, Cambridge, UK, pp. 175-178.
9. Pierre Moulin and Alexia Briassouli: "A Stochastic QIM Algorithm for Robust, Undetectable Image Watermarking", ICIP 2004, Singapore (top 15% of papers).
10. Alexia Briassouli and Pierre Moulin: "Detection-Theoretic Analysis of Warping Attacks in Spread-Spectrum Watermarking", ICASSP 2003, Hong-Kong.
11. Pierre Moulin, Alexia Briassouli and Henrique Malvar: "Detection-Theoretic Analysis of Desynchronization Attacks in Watermarking", DSP 2002, Greece 14th International Conference on, 2002, Vol.1, pp. 77- 84, July 1-3, Santorini.
12. Pierre Moulin and Alexia Briassouli: "The Gaussian Fingerprinting Game", 2002 CISS, Conference on Information Sciences and Systems, Princeton Univ., March 20 - 22, 2002.
13. Alexia Briassouli, Y. Xirouhakis and A. Delopoulos: "Recursive 3D Reconstruction under Orthography using KalmanFiltering", International Workshop on Synthetic-Natural Hybrid Coding and 3D Imaging (IWSNHC3DI'99), Santorini, Greece.

Under review:

1. Alexia Briassouli, Dimitra Matsiki, Ioannis Kompatsiaris, "Wavelet Domain Processing for Trajectory Extraction", *submitted to ICIP 2008*.
2. Alexia Briassouli, Georgios Th. Papadopoulos, Vasileios Mezaris, Ioannis Kompatsiaris, Michael G. Strintzis: "Video Semantics Extraction from the Fusion of Motion, Color, Texture", *submitted to ICIP 2008*.
3. Alexia Briassouli, Ioannis Kompatsiaris, "Statistical Processing of Video for Detection of Events in Space and Time", *submitted to ICME 2008*.

- 4 . Alexia Briassouli, Dimitra Matsiki, Ioannis Kompatsiaris, "Trajectory Extraction in the Wavelet Domain", *submitted to ECCV 2008*.
- 5 . Alexia Briassouli, Ioannis Kompatsiaris, "Sequential Change Detection for Temporal Event Localization in Video", *submitted to ECCV 2008*.

Under preparation:

- 1 . Alexia Briassouli, Ioannis Kompatsiaris, "Event Detection in Surveillance Video Using Statistical Change Detection in Time", *υπό ετοιμασία προς υποβολή σε περιοδικό*.
- 2 . Alexia Briassouli, Narendra Ahuja, "Motion Characterization and Periodicity Detection by Time-Frequency Distributions", *υπό ετοιμασία προς υποβολή σε περιοδικό*.
- 3 . Alexia Briassouli, Christina Evangelou, Ioannis Kompatsiaris, "Temporal Ontologies for Video Event Detection and Characterization", *υπό ετοιμασία προς υποβολή σε περιοδικό*.

Number of Citations: 54