

# Christophoros Nikou

Professor,  
Department of Computer Science and Engineering,  
University of Ioannina, Greece.

## Professional address:

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## Education

- 1999 PhD in Image Processing and Computer Vision.  
Université Louis Pasteur – Strasbourg I, France.
- 1995 DEA in Photonics and Image Processing.  
Major option: Image Processing.  
Université Louis Pasteur – Strasbourg I, France.
- 1994 Diploma degree in Electrical Engineering.  
Major option: Telecommunications.  
Aristotle University of Thessaloniki, Greece.

## Research interests

Image processing, image analysis, computer vision, pattern recognition, machine learning, robot vision, medical imaging, statistical image and video processing and analysis, information theory.

## Professional Experience

- Since Sep 2018 Professor, Department of Computer Science and Engineering,  
University of Ioannina, Greece.
- Sep 2013 – Aug 2018 Associate Professor, Department of Computer Science and  
Engineering, University of Ioannina, Greece.
- Jul 2009 – Sep 2013 Assistant Professor, Department of Computer Science, University  
of Ioannina, Greece.
- Oct 2004 - Jul 2009 Lecturer, Department of Computer Science, University of Ioannina,  
Greece.
- Jan 2002 - Oct 2004 Research Project Manager  
Compucon SA, Thessaloniki, Greece.
- Jan 2001 - Feb 2002 Post-doctoral researcher.  
Aristotle University of Thessaloniki. Department of Informatics.

## Academic leave

- Sep 2015-Aug 2016 Visiting Associate Professor, Department of Computer Science,  
University of Houston, USA (on Academic leave)

## Teaching

University of Ioannina. Department of Computer Science (since academic year 2004-2005):

- Undergraduate courses
  - Signals and Systems
  - Digital Image Processing
  - Information Theory and Coding
  - Digital Communications
  - Computational Mathematics
- Graduate courses
  - Computer Vision
  - Methods of Image Analysis
  - Topics on Digital Image Processing: Compression and Analysis of Image Sequences (with L. P. Kondi)

Hellenic Open University, Computer Science program, 2016-2017

- Module ΠΛΗ31 (Artificial Intelligence-Applications)

University of Houston, Department of computer Science, academic year 2015-2016:

- Graduate courses
  - Computer Vision (COSC 6373)
  - Advanced Image computing (COSC 7378)

Teaching accomplished in the framework of Erasmus Teaching Staff Mobility

- University of Strasbourg, France. Doctoral School of Mathematics, Information and Engineering Sciences.
  - Topics in Image Analysis and Processing (June 2011). 12 hours (6h theory and 6h lab).
- University of Lodz, Poland. Department of Mathematics and Informatics.
  - Topics in Image Analysis (May 2012). 6h theory.

## Supervision of PhD Students

Accomplished PhDs

1. Marina Plissiti. “Methods for cytological image analysis”. University of Ioannina, Department of Computer Science, January 2012
2. Giorgos Sfikas. “Statistical models for shape analysis on nonlinear manifolds. Application to brain imaging”. University of Strasbourg, France (Doctoral School of Mathematics, Information and Engineering Sciences), September 2012. Co-supervision with Associate Professor C. Heinrich.
3. Dimitris Gerogiannis. “Registration of multidimensional (2D/3D) points”. University of Ioannina, Department of Computer Science and Engineering, December 2014.
4. Vassilis Karavassilis. “Visual tracking in image sequences using mixture models”. University of Ioannina, Department of Computer Science and Engineering, December 2015.
5. Michalis Vrigkas. “Human activity recognition using conditional random fields and privileged information”, University of Ioannina, Department of Computer Science and Engineering, February 2016.

PhDs in progress

6. A. Giotis, “Word spotting in handwritten document images”, University of Ioannina, Department of Computer Science and Engineering, since November 2013.

7. Iason Panagos. University of Ioannina, Department of Computer Science and Engineering. Lip reading from video sequences, since November 2019.
8. Giorgos Tsigkas. University of Ioannina, Department of Computer Science and Engineering. Computer vision for cultural heritage image understanding, since January 2020.

### **Supervision of Graduate (MSc) Students**

1. Demetris Gerogiannis. Rigid image registration by Gaussian mixture models. September 2007.
2. Vasilis Karavassilis. Visual object tracking using distances between Gaussian mixture models. February 2009.
3. Argyro Kampouraki. Statistical methods for tomographic image reconstruction. June 2009.
4. Konstantina Loukopoulou. Image segmentation by superpixel merging. February 2010.
5. Theodosis Gkamas. Bayesian dense optical flow. October 2010.
6. Michalis Vrigkas. Image super-resolution methods. October 2010.
7. Christos Pappas. Natural image segmentation using supervised and unsupervised learning methods. February 2011.
8. Angelos Giotis. Object detection in images using shape models. October 2012.
9. Alexandros Lioulemes. Robot visual homing. June 2013.
10. Eleni Louka. Detection and segmentation of clustered nuclei in cytological images. October 2013.
11. Konstantinos Kalogeropoulos. MRF methods for background subtraction. October 2013.
12. Katerina Papadimitriou. Tomographic image reconstruction with spatially varying priors. June 2015.
13. Ermioni Mastora. Human action recognition using conditional random fields. Since February 2017.
14. Evangelos Kazakos. Hand pose estimation using convolutional neural networks. February 2017.
15. Georgia Chatzitzisi. Depth-based 3D hand-pose tracking using convolutional and LSTM networks. June 2018.
16. Panagiotis Kouzouglidis. Automatic video colorization using 3D conditional GAN. February 2019.
17. Iason Panagos. Hierarchical hand-pose estimation using recurrent neural networks. February 2019.
18. Giorgos Koukouzas. Image segmentation in the context of autonomous driving using Mask R-CNN. July 2019.
19. Stavros Emmanouilidis. Image segmentation using features from fully convolutional neural networks. July 2019.
20. Alexandros Giohalas. Keyword spotting using variational autoencoders. July 2019.
21. Giorgos Tsigkas. Automatic detection of ancient rock carvings using computer vision methods. October 2019.
22. Anastasia Gkouyannou. Text to image synthesis using GAN. February 2020.

## **Supervision of Undergraduate Students**

1. Argyro Kampouraki. Classification of ECG signals using support vector machines. September 2006.
2. Ermioni Zacharouli. Parameterization of 3D objects with physics based deformable models. June 2007.
3. Ourania Papadopoulou. Image segmentation by clustering. September 2007.
4. Vasilis Karavassilis. Motion estimation and segmentation in long image sequences. September 2007.
5. Michalis Vrigkas. Image inpainting by partial differential equations. June 2008.
6. Elli Soukallari. Methods for non rigid registration of images and points. September 2008.
7. Theodosis Gkamas. Image registration using generic elastic networks. September 2008.
8. Electra Zografou. Shape coding in the framework of MPEG-4. June 2009.
9. Alexandros Lioulemes. Visual tracking using a robotic platform. September 2011.
10. Nikiforos Pittaras. Image registration using particle swarm optimization. October 2013.
11. Smaro Kelesidou. Manifold learning methods in multimodal rigid image registration. June 2014.
12. Evangelos Kazakos. Interactive image segmentation using GrabCut. June 2014.
13. Georgia Chatzitzisi. “Depth-based hand pose estimation with convolutional & LSTM networks”. June 2018.
14. Panagiotis Dimitrakopoulos. “Detection of pathological cervical cells in Pap smear images using convolutional neural networks”, February 2019.
15. Panagiotis Kouzouglidis. “Video colorization using 3D GANs”, February 2019.
16. Iason Panagos. “Hierarchical hand-pose estimation using recurrent neural networks”, February 2019.

## **Member of PhD Examination Committees**

1. Ioannis Chantas. Bayesian methods for image restoration and super-resolution. Supervisor: N. Galatsanos. University of Ioannina, Department of Computer Science, October 2008.
2. Dimitris Tzikas. Bayesian methods for machine learning and image processing. Supervisor: A. Likas. University of Ioannina, Department of Computer Science, January 2009.
3. Ioanna-Ourania Stathopoulou. Emotion perception and recognition in face images with applications in affective human-computer interaction systems. Supervisor: G. Tsihrintzis. University of Piraeus, Department of Computer Science, June 2009.
4. Aristomenis Lampropoulos. “Machine learning-based recommendation methods for multimedia data”. University of Piraeus, Department of Computer Science, March 2010. Supervisor: G. Tsihrintzis.
5. Evangelos Oikonomou. “Bayesian methods for processing and analysis of biomedical signals and images”. University of Ioannina, Department of Computer Science, July 2010. Supervisor: K. Blekas.
6. Evanthia Tripoliti. “Automated analysis of brain function in patients with Alzheimer’s disease”. University of Ioannina, Department of Computer Science, March 2012. Supervisor: G. Manis.

7. Petros Karvelis. "Analysis of multichannel chromosome images". University of Ioannina, Department of Computer Science, November 2012. Supervisor: A. Likas.
8. Theodoros Athanasiadis. "Mesh parameterization for feature-based mesh editing applications". University of Ioannina, Department of Computer Science and Engineering, October 2013. Supervisor: I. Fudos.
9. Olga Zoidi. "Computer vision and machine learning techniques for tracking and classifying anthropocentric data". Aristotle University of Thessaloniki, September 2014. Supervisor: I. Pitas.
10. Angeliki Katsenou. "Cross-layer resource allocation for video transmission over wireless multi-access networks". University of Ioannina, Department of Computer Science and Engineering, June 2014. Supervisor: L. P. Kondi.
11. Grigoris Tzortzis. "Clustering using similarity and kernel matrices". University of Ioannina, Department of Computer Science and Engineering, June 2014. Supervisor: A. Likas.
12. Nikolaos Tziortziotis. "Machine learning for the development of intelligent agents". University of Ioannina, Department of Computer Science and Engineering, March 2015. Supervisor: K. Blekas.
13. Noelia Vallez Enano, "False positive reduction in detection problems", University of Castilla-La Mancha, Ciudad Real, Spain, July 2015.
14. Lingfeng Zhang. "Towards improving single label and multilabel classifications", University of Houston, USA, January 2017.
15. Ioannis Kyriazis. "Algorithms and tools for deriving editable models from cross-sectional data sets". University of Ioannina, Department of Computer Science and Engineering, September 2017. Supervisor: I. Fudos.
16. Ioannis Mademlis. "Machine Learning and Computer Vision Methods for Intelligent Video Analysis". October 2018. Supervisor: I. Pitas.
17. Ioannis Kapsouras. "Skeleton motion analysis". Aristotle University of Thessaloniki, Department of Computer Science, July 2019. Supervisor: N. Nikolaidis.

### **Member of PhD Advisory Committees**

1. A. Mairgiotis. "New statistical image models for the watermark detection and design". University of Ioannina, Department of Computer Science, February 2010. Supervisor: N. Galatsanos.
2. E. Tsiligianni. "Sparse representations for image and video coding". University of Ioannina, Department of Computer Science, since February 2010. Supervisor: L. P. Kondi.
3. N. Tziortziotis. "Reinforcement learning for automated robot navigation". University of Ioannina, Department of Computer Science, since October 2010. Supervisor: K. Blekas.
4. K. Pandremmenou. "Game theory in multimedia communications", since October 2011. Supervisor: L. P. Kondi.
5. K. Papadimitriou "Sign Language Recognition", since October 2015. University of Thessaly, Greece. Supervisor: G. Potamianos.
6. Vasiliki Chasani. "Machine learning methods based on multimodality tests". Since May 2019. Supervisor: A. Likas.

### **Academic services and distinctions**

- IEEE Senior Member (since November 2011)

- Associate Editor:
  - IEEE Transactions on Image Processing, since March 2018.
  - Frontiers. Associate Editor of Vision Systems Theory, Tools and Applications (specialty section of Frontiers in ICT and Frontiers in Robotics and AI), since February 2015.
  - EURASIP Journal on Advances in Signal Processing (since September 2008).
  - ISRN Artificial Intelligence (July 2011 – April 2014).
- General co-Chair
  - IEEE International Conference on Image Processing (ICIP) 2018
- Program co-Chair:
  - DSP 2013
- Area Chair
  - EUSIPCO 2017 (Area Chair in Biomedical Signal and Image Processing)
- Technical Program Committee Member:
  - IEEE ITAB 2006, IEEE ITAB 2010, DSP 2009, DSP 2011, IEEE GLOBECOM 2012, EUSIPCO 2012, EUSIPCO 2013, EUSIPCO 2014, IEEE ICCVE 2014, SETN 2014, ICFHR 2014, CSIP 2014, IEEE ISM 2014, IEEE ISM 2014, ICFHR 2014, BIOIMAGING 2015, ICIST 2015, EUSIPCO 2015, IPMSC 2015, SITIS 2016, ICIC 2016, HTBA 2016, EUSIPCO 2016, HTBA 2018, HTBA 2019, DB&IS 2018, SITIS 2018, ISCAI 2019, CAE 2020.
- Steering Committee Member
  - IEEE Digital Media Industry Forum 2016
- Reviewer in scientific journals
  - IEEE Transactions on Image Processing, IEEE Transactions on Neural Networks, IEEE Transactions on Circuits and Systems for Video Technology, Journal of Mathematical Imaging and Vision, Pattern Recognition, Pattern Recognition Letters, EURASIP Journal of Advances in Signal Processing, IEEE Signal Processing Letters, IEEE Transactions on Biomedical Engineering, IEEE Transactions on Information Technology in Biomedicine, Journal of Neuroscience Methods, IEEE Transactions on Medical Imaging, IEEE Transactions on Geoscience and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, SPIE Electronic Imaging, Journal of Mathematical Analysis and Applications, Traitement du Signal, IEEE Transactions on Systems, Man and Cybernetics (Part B), Signal Processing: Image Communication, IEEE Multimedia.
- Reviewer in selected/top rank scientific conferences:
  - MICCAI, ICIP, EUSIPCO, ICPR, ICCV.
- Sponsorship Chairman of the IEEE International Conference on Image Processing 2001 (ICIP '01), Thessaloniki October 2001. 1200 participants.
- Reviewer/Evaluator of Research Proposals
  - ANR (Agence Nationale pour la Recherche), France.
  - National Authority for Scientific Research, Romania.

- National Science Center, Poland
- General Secretariat of Research and Technology, Greece.
- ERANETMED, Horizon 2020
- Evaluator of the State Scholarships Foundation (Greece).
- Counselor of the IEEE Student Branch of the University of Ioannina.

### **Invited speaker**

- 2<sup>nd</sup> EURASIP Signal Processing Jam, Thessaloniki, Greece, May 2012. (with A. Likas).
- 3<sup>rd</sup> EURASIP Signal Processing Jam, Athens, Greece, January 2015.
- University of Houston, Department of Computer Science, September 2016.
- 2<sup>nd</sup> International Conference on Informatics and Computing (ICIC 2017), 1-3 November 2017, Jayapura, Papua, Indonesia. Keynote speaker.
- 5<sup>th</sup> International Conference on Instrumentation, Communication, Information Technology, and Biomedical Engineering (ICIC-BME 2017), Bandung, Indonesia, 6-7 November 2017. Keynote speaker.

### **Participation in Funded Research Projects as Principal Investigator**

BAMEDIMA 24 months (2006-2008) Budget: 15k Euro.	Bayesian Methodologies in Medical Image Analysis  Greek General Secretariat for Research and Technology (GTET, Greece-France Collaboration).  In collaboration with the University of Strasbourg (France).  Principal Investigator: C. Nikou. University of Ioannina, Department of Computer Science.
ISMIA 24 months (2011-2013) Budget: 150k Euro	Intelligent System for Microscopic Image Analysis for the Detection of Pathological Cells in Pap smear Images.  Region of Epirus (ΕΣΠΑ 2007-2013).  Principal Investigator: C. Nikou. University of Ioannina, Department of Computer Science.
NAVITOUR 18 months (2012-2013) Budget: 150k Euro	Innovative Augmented Reality m-Services for Tourists  Interreg Greece-Albania 2011  Principal Investigator: C. Nikou. University of Ioannina, Department of Computer Science.

<p>StillNoFace 24 months (2015-2017) Budget: 168k Euro</p>	<p>Identity Matching from Still Images Without Face Information.  EU Marie Sklodowska-Curie Action – Individual Fellowship (Outgoing Fellowship)  Principal Investigator (beneficiary): C. Nikou  University of Houston, Department of Computer Science. and University of Ioannina, Department of Computer Science and Engineering.</p>
<p>IMPALA 36 months (2018-2021) Budget: 583k Euro 320 k Euro for U. of Ioannina</p>	<p>Consumer visual tracking, gender and age estimation with deep learning using RGB and thermal images.  Ministry of Finance, Operational Programme Competitiveness, Entrepreneurship and Innovation (EPAnEK 2014-2020), Special Action “Research-Create-Innovate”.  Principal Investigator: C. Nikou  University of Ioannina, Department of Computer Science and Engineering and WEST S.A.</p>
<p>Oncorecords 24 months (2018-2020) Budget: 503k Euro 179k Euro for U. of Ioannina</p>	<p>Oncorecords: A Patient Centered Medical Records Management System.  Ministry of Finance, Operational Programme Competitiveness, Entrepreneurship and Innovation (EPAnEK 2014-2020), Special Action “Research-Create-Innovate”.  Principal Investigators: L. P. Kondi and C. Nikou  University of Ioannina, Department of Computer Science and Engineering and Dataverse Ltd.</p>
<p>DesignThinkingSMEs 36 months (2018-2021) Budget: 305k Euro 88k Euro for U. of Ioannina</p>	<p>Development of on line toolkits and innovative on-line services for the implementation of Design Thinking methodology and Augmented Reality technology to support research and innovation in small and medium-sized enterprises of Tourism, Cultural and Creative Industries aimed at developing innovative products and services.  Region of Epirus, Operational Program Epirus 2014-2020  Principal Investigator: C. Nikou  University of Ioannina, Department of Computer Science and Engineering,</p>



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Omega.S.A.

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BESSARION  
36 months (2019-2022)  
Budget: 560k Euro  
382k Euro for U. of Ioannina

Byzantine electronic scholar on-the-spot: automatic inscription analysis, transcription and translation.

Ministry of Finance, Operational Programme Competitiveness, Entrepreneurship and Innovation (EPAnEK 2014-2020), Special Action "Open Innovation in Culture".

Principal Investigator: C. Nikou

University of Ioannina,  
Department of Computer Science and Engineering,  
Commitech A.E.,  
Ministry of Culture, Ephorate of Antiquities of Arta.

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#### Participation in Funded Research Projects (Researcher)

MOUMIR  
36 months (2000-2002)  
Budget: 1.5M. Euro

Models for Unified Multimedia Information Retrieval.

European Union (FP5-IST)

Principal Investigator: I. Pitas.  
Aristotle University of Thessaloniki, Department of Informatics.

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CARROUSO  
30 months (2001-2003)  
Budget: 5.6M Euro

Creating, Assessing and Rendering in Real Time of High Quality Audio-Visual Environments in MPEG-4 Context.

European Union (FP5-IST)

Principal Investigator: I. Pitas.  
Aristotle University of Thessaloniki, Department of Informatics.

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INTERSTORE  
24 months (2007-2008)  
Budget: 800k Euro

Decentralized Data Management with Applications to Biomedical Image Processing.

Interreg Greece-Italy.

Principal Investigator: S. Anastasiadis.  
University of Ioannina, Department of Computer Science.

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VIDEOSUM  
36 months (2011-2014)

Digital library for video storing, processing and summarization.

Greek General Secretariat for Research and Technology (ΓΓΕΤ, Συνεργασία 2009).

Principal Investigator: A. Likas.  
University of Ioannina, Department of Computer Science.

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### **External Member of Academic Electoral and Reporting Committees**

- University of Piraeus, Department of Computer Science, Lecturer position in “Signal processing with emphasis on sound-speech”, June 2010, Member of the Electoral Body.
- International Hellenic University, School of Science and Technology, Assistant Professor or Lecturer position in “Signal, image and video processing”, Member of the Electoral Body and coordinator of the Reporting Committee.
- University of Patras, Department of Computer Science and Engineering. Member of the Electoral Body. Associate Professor in “Digital signal processing with emphasis on multidimensional applications”, 2017.
- Democritus University of Thrace, Department of Electrical and Computer Engineering. Member of the Electoral Body. Assistant Professor tenure in “Digital image and sound processing”, 2017.

### **Administrative Tasks**

- Coordinator of the International Evaluation Committee of the University of Ioannina (2013-2016, 2019-).
- Representative of the School of Engineering to the Centre for Education and Life-Long Learning of the University of Ioannina (since 2017).
- Member of the Erasmus+ International Credit Mobility Committee of the University of Ioannina (2015).
- Coordinator of the Committee of the University of Ioannina for the collaboration with the National Organization for the Certification of Qualifications and Vocational Guidance (2015-2017).
- Representative of the Department of Computer Science and Engineering to the Research Committee of the University of Ioannina (since 2018).
- Representative of the Department of Computer Science at the Unit of Employment and Career (ΔΑΣΤΑ) of the University of Ioannina (since 2011).
- Member of the following Committees of the Department of Computer Science of the University of Ioannina: Students Internship Committee, Seminar organization Committee, Evaluation Committee, ECTS and International Collaboration Committee.
- Member of the Graduate Students Selection Committee (4 times since 2005, twice as coordinator).
- Member of the Grants Committee of the Department of computer Science and Engineering of the University of Ioannina (2019).
- Member of the Appeals Board of the Research Committee of the University of Ioannina (2019).

### **Academic Awards, Grants, Fellowships**

- PhD Scholarship of the French Ministry of Education (1995-1996).
- Marie Curie Fellowship Grant in the “Training and Mobility of Researchers” program of the European Commission, 4th FP, 1996-1999.

- Award for the best PhD Thesis in the academic year 1999 of the School of Medicine of the University of Strasbourg. For the first time, the prize went to a PhD thesis not delivered by the School of Medicine.
- Marie Skłodowska-Curie Individual Fellowship (Outgoing Fellowship) to be on Academic leave at the University of Houston, USA, 2015-2017, Acceptance rate 6%.

### **Dissertations-theses**

1999 PhD Thesis

Université Louis Pasteur – Strasbourg I, France.

Laboratoire des Sciences de l'Image de l'Informatique et de la Télédétection (LSIIT).

In collaboration with Institut de Physique Biologique. Faculté de Médecine (IPB).

Subject: «Contribution to the registration of single and multimodal images: approaches by robust similarity measures and statistically constrained physics-based deformable models».

Supervisor: Prof. Fabrice Heitz.

1995 DEA Project

Université Louis Pasteur – Strasbourg I, France.

Subject: «Tracking the rigid motion and deformation of 3D objects in long image sequences».

Supervisor: Prof. Fabrice Heitz.

1993 Engineering Diploma Project

In the framework of the ERASMUS program of the European Community.

Université de Nantes, France.

Institut de Recherche et de Développement aux Techniques de l'Electronique (IRESTE).

Subject: «Vector quantization in sub-band image decomposition for the compression of HDTV images». In collaboration with THOMSON CSF.

Supervisor: Prof. Dominique Barba and Prof. M. G. Strintzis.

### **Foreign languages**

- French (fluently)
- English (fluently)
- German (beginner level).

## Publications

### Citations, cross-citations, February 2020

Google Scholar: 2921 citations, h-index =25.

Scopus: 1728 cross-citations, h-index = 22.

### Journal publications

- [J1] C. Nikou, J. P. Armspach, F. Heitz, I. J. Namer, and D. Grucker. MR/MR and MR/SPECT registration of brain images by fast stochastic optimization of robust voxel similarity measures. **NeuroImage**, Vol. 8, No 1, pp. 30-43, 1998.
- [J2] C. Nikou, F. Heitz, and J. P. Armspach. Robust voxel similarity metrics for the registration of dissimilar single and multimodal images. **Pattern Recognition**, Vol. 32, No 8, pp. 1351-1368, 1999.
- [J3] C. Nikou, F. Heitz, J. P. Armspach, I. J. Namer. Mesures de similarité robustes pour le recalage d'images médicales volumiques multimodales. **Traitement du Signal**, Vol. 16, No 3, pp. 255-272, 2000.
- [J4] C. Nikou, G. Bueno, F. Heitz, J. P. Armspach. A joint physics-based statistical deformable model for multimodal brain image analysis. **IEEE Transactions on Medical Imaging**, Vol 20, No 10, pp. 1026-1037, 2001.
- [J5] C. Nikou, F. Heitz, A. Nehlig, I. J. Namer and J. P. Armspach. A robust statistics-based global energy function for the alignment of serially acquired autoradiographic sections. **Journal of Neuroscience Methods**, Vol. 124, No 1, pp. 93-102, 2003.
- [J6] S. Krinidis, C. Nikou and I. Pitas. Reconstruction of serially acquired slices using physics-based modeling. **IEEE Transactions on Information Technology in Biomedicine**, Vol. 7, No 4, pp. 394-403, 2003.
- [J7] S. Krinidis, C. Nikou and I. Pitas. A global energy function for the alignment of serially acquired slices. **IEEE Transactions on Information Technology in Biomedicine**. Vol. 7, No. 2, pp. 108-113, 2003.
- [J8] E. Loutas, C. Nikou and I. Pitas. Probabilistic multiple face detection and tracking using entropy measures. **IEEE Transactions on Circuits and Systems for Video Technology**, Vol. 14, No 1, pp. 128-135, 2004.
- [J9] E. Loutas, I. Pitas and C. Nikou. Entropy-based metrics for the analysis of partial and total occlusion in video object tracking, **IEE Proceedings of Vision, Image and Signal Processing**, Vol. 151, No. 6, pp. 487-497, 2004.
- [J10] Z. Cernekova, I. Pitas and C. Nikou. Information theory-based shot cut/fade detection and video summarization. **IEEE Transactions on Circuits and Systems for Video Technology**, Vol. 16, No. 1, pp 82-91, 2006.
- [J11] C. Nikou, N. Galatsanos and A. Likas. A class-adaptive spatially variant finite mixture model for image segmentation. **IEEE Transactions on Image Processing**, Vol. 16, No 4, pp 1121-1130, 2007.

- [J12] K. Blekas, C. Nikou, N. Galatsanos and N. Tsekos. A regression mixture model with spatial constraints for clustering spatiotemporal data. **International Journal on Artificial Intelligence Tools**, Vol. 17, No 5, pp 1023-1041, 2008.
- [J13] A. Kampouraki, G. Manis and C. Nikou. Heartbeat time series classification with support vector machines. **IEEE Transactions on Information Technology in Biomedicine**, Vol. 13, No 4, pp 512-518, 2009.
- [J14] D. Gerogiannis, C. Nikou and A. Likas. The mixtures of Student's t-distributions as a robust framework for rigid registration. **Image and Vision Computing**, Vol. 27, No 9, pp 1285-1294, 2009.
- [J15] G. Sfikas, C. Nikou, N. Galatsanos and C. Heinrich. Spatially varying mixtures incorporating line processes for image segmentation. **Journal of Mathematical Imaging and Vision**, Vol. 36, No 2, pp. 91-110, 2010.
- [J16] C. Nikou, A. Likas and N. Galatsanos. A Bayesian framework for image segmentation with spatially varying mixtures. **IEEE Transactions on Image Processing**, Vol. 19, No 9, pp. 2278-2289, 2010.
- [J17] M. Plissiti, C. Nikou and A. Charchanti. Automated detection of cell nuclei in Pap smear images using morphological reconstruction and clustering. **IEEE Transactions on Information Technology in Biomedicine**, Vol. 15, No 2, pp. 233-241, 2011.
- [J18] V. Karavasilis, C. Nikou and A. Likas. Visual tracking using the earth mover's distance between Gaussian mixtures and Kalman filtering. **Image and Vision Computing**, Vol. 29, No 5, pp. 295-305, 2011.
- [J19] M. Plissiti, C. Nikou and A. Charchanti. Combining shape, texture and intensity features for cell nuclei extraction in Pap smear images. **Pattern Recognition Letters**, Vol. 32, No 6, pp. 838-853, 2011.
- [J20] G. Sfikas, C. Heinrich, J. Zallat. C. Nikou and N. Galatsanos. Recovery of polarimetric Stokes images by spatial mixture models. **Journal of the Optical Society of America-A**, Vol. 28, No 3, pp. 465-474, 2011.
- [J21] T. Athanasiadis, I. Fudos, C. Nikou and V. Stamati. Feature-based 3D morphing based on geometrically constrained spherical parameterization. **Computer Aided Geometric Design**, Vol. 29, No 1, pp. 2-17, 2012.
- [J22] D. Gerogiannis, C. Nikou and A. Likas. Registering sets of points using Bayesian regression. **Neurocomputing**, Vol. 89, pp.122-133, 2012.
- [J23] V. Karavasilis, K. Blekas and C. Nikou. A novel framework for motion segmentation and tracking by clustering incomplete trajectories. **Computer Vision and Image Understanding**, Vol. 116, No 11, pp. 1135-1148, 2012.
- [J24] M. Plissiti and C. Nikou. Overlapping cell nuclei segmentation using a spatially adaptive active physical model. **IEEE Transactions on Image Processing**, Vol. 21, No 11, pp. 4568-4580, 2012.
- [J25] M. Vrigkas, C. Nikou and L. P. Kondi. Accurate image registration for MAP image super-resolution. **Signal Processing: Image Communication**, Vol. 28, No 5, pp.494-508, 2013.

- [J26] G. Rigas, C. Nikou, Y. Goletsis and D. I. Fotiadis. Hierarchical similarity transformations between Gaussian mixtures. **IEEE Transactions on Neural Networks and Learning Systems**, Vol. 24, No 11, pp. 1824-1835, 2013.
- [J27] M. Vrigkas, V. Karavasilis, C. Nikou and I. Kakadiaris. Matching mixtures of curves for human action recognition. **Computer Vision and Image Understanding**, accepted for publication, November 2013.
- [J28] D. Gerogiannis, C. Nikou and A. Likas. Modeling sets of unordered points using highly eccentric ellipses. **EURASIP Journal on Advances in Signal Processing**, 2014:11, 2014.
- [J29] G. Chantas, T. Gkamas and C. Nikou. Variational-Bayes optical flow. **Journal of Mathematical Imaging and Vision**, Vol. 50, No 3, pp. 199-213, 2014, DOI:10.1007/s10851-014-0494-3.
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- [C68] G. Sfikas, B. Gatos and C. Nikou. SemiCCA: a new supervised probabilistic CCA model for keyword spotting. IEEE International Conference on Image Processing (**ICIP'18**), pp. 1107-1111, 17-20 September 2017, Beijing, China.
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- [C70] O. Magana, M. Vrigkas, C. Nikou and I. Kakadiaris. SPICE: superpixel classification for cell detection and counting. 13th International Joint Conference on Computer Vision Theory and Applications (**VISAPP'18**), Funchal, Madeira, Portugal, 27-29 January 2018. Accepted.
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- [C72] M. Plissiti, P. Dimitrakopoulos, G. Sfikas, C. Nikou, O. Krikoni and A. Charchanti. SPIKAMED: a new dataset for feature and image based classification of normal and pathological cervical cells in Pap smear images. 25<sup>th</sup> IEEE International Conference on Image Processing (**ICIP'2018**), Athens, Greece, 7-10 October 2018.

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- [C76] M. Zerva, M. Vrigkas, L. P. Kondi and C. Nikou. Improving 3D medical image compression efficiency using spatiotemporal coherence. **Electronic Imaging 2020**, 26-30 January 2020, Burlingame, CA, USA.
- [C77] P. Dimitrakopoulos, G. Sfikas and C. Nikou. ISING-GAN: Annotated data augmentation with a spatially constrained generative adversarial network. IEEE International Symposium on Biomedical Imaging (**ISBI'20**), 3-7 April 2020, Iowa City, Iowa, USA.
- [C78] P. Dimitrakopoulos, G. Sfikas and C. Nikou. WIND: Wasserstein inception distance for evaluating generative adversarial network performance. IEEE International Conference on Acoustics, Speech and Signal Processing (**ICASSP'20**), 4-8 May, 2020, Barcelona, Spain.

### Conference publications (abstracts)

- [CA1] J. P. Armspach, C. Nikou, I. J. Namer, L. Rumbach, D. Grucker, F. Heitz, and J. Chambron. Automated registration of MRI for the follow-up of multiple sclerosis patients. European Conference of the Society of Magnetic Resonance Materials in Physics, Biology and Medicine (**ESMRMPBM'96**), 1996, Prague, Czech Republic. Published in Magnetic Resonance Materials in Physics Biology and Medicine, 4(2):291.
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- [CA3] C. Nikou, I. J. Namer, J. P. Armspach, F. Heitz, and D. Grucker. Recalage d'images médicales IRM - TEMP par une approche robuste. Congrès de Médecine Nucléaire de la langue Française (**MNLF'97**), 1-3 October 1997, Saint Malo, France.
- [CA4] J. Namer, A. Thiriaux, J. P. Armspach, C. Nikou, F. Heitz, D. Gounot, E. Hirsch, C. Marescaux and D. Grucker. Localisation préchirurgicale des zones épileptogènes par la superposition des images IRM-TEMP. Intérêt de deux examens TEMP critique et inter-critique. Congrès de Médecine Nucléaire de la langue Française (**MNLF'99**), 17-19 November 1999, Toulouse, France.
- [CA5] C. Nikou, N. Galtsanos and N. Tsekos. Spatial segmentation based on the signal time activity of dynamic cardiac images during intracoronary infusion of GD contrast agent.

International Symposium of Magnetic Resonance in Medicine (**ISMRM'07**), 19-25 May 2007, Berlin, Germany.

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- [CA7] M. Plissiti, C. Nikou, O. Krikoni and A. Charchanti. Combining cytoplasm and nuclei features for the classification of pathological cells in Pap smear images: a preliminary study on a new data base. IEEE International Symposium on Biomedical Imaging (**ISBI'17**), 18-21 April 2017, Melbourne, Australia.
- [CA8] A. Memariani, , S. Upadhyay, C. Nikou, B. T. Endres, E. Bassères, K. W. Garey, I. A. Kakadiaris. Detection of elongated touching cells with Inhomogeneous illumination using a stack of conditional random fields. Computer Vision for Microscopy Image Analysis (**CVMI'17**) Workshop held in conjunction with the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR'17), 21-26 July 2017, Honolulu, HW, USA.

## **Book Chapters**

- [BC1] E. Loutas, C. Nikou and I. Pitas. Information theory-based face tracking. In **Multisensor Surveillance Systems**, Editors: G. L. Foresti, C. S. Regazzoni, P. K. Varshney, Chapter 14, pages 251-264. Kluwer Academic Publishers, 2003. ISBN 978-1402074921.
- [BC2] M. Plissiti and C. Nikou. A review of automated techniques for cervical cell image analysis and classification. In **Biomedical Imaging and Computational Models in Biomechanics**. Editors: D. Iacoviello and U. Andreaus. Lecture Notes in Computational Vision and Biomechanics, Vol.4, pp. 1-18, Springer 2013. ISBN 978-9400742697.