

Contact

Center for Visual Computing
 Ecole Centrale Paris
 Grande Voie des Vignes
 92295 Chatenay-Malabry, France
 Phone: +33 (0) 141131097
 Email: iasonas.kokkinos@ecp.fr
<http://vision.mas.ecp.fr/Personnel/iasonas/>

Education

Habilitation á Diriger des Recherches (HDR), Computer Science, 2013
 Université Paris-Est.
 HDR Dissertation: “Learning and Optimization for Shape-based representations.”
 Ph.D., Electrical and Computer Engineering, 2006
 National Technical University of Athens.
 Ph.D. Dissertation: “Synergy between Image Segmentation and Object Recognition using Geometrical and Statistical Computer Vision Techniques.”
 Eng. Diploma, Electrical and Computer Engineering, 2001
 National Technical University of Athens.
 Diploma Thesis: “Modeling and Prediction of Speech Signals using Chaotic Time-Series Analysis Techniques.”

Appointments

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|------------------|-----------------------------|---------------------------------------|
| 9/2008 - present | Assistant Professor | ECP, Dept. of Applied Mathematics |
| 9/2008 - present | Affiliate Researcher | INRIA-Saclay, Galen Group |
| 6/2006 - 8/2008 | Postdoctoral Researcher | UCLA, Dept. of Statistics |
| 11/2001- 6/2006 | Graduate Research Assistant | NTUA, School of ECE |
| 3/2002 - 7/2002 | Visiting Student | INRIA-Sophia Antipolis, Odyssee Group |

Curriculum Development**Machine Learning for Computer Vision (2008-)**

Mathématiques, Vision, Apprentissage (MVA) M2-Master.

8 lectures - 24 teaching hours, attended by 20-30 students annually.

The course covers discriminative techniques (Logistic Regression, Adaboost, Support Vector Machines, Multiple Instance Learning) and generative models (Mixture Models and Expectation-Maximization, Linear Models, Hidden Markov Models, Markov Random Fields) with an emphasis on applications to computer vision.

Introduction to Signal Processing (2009-)

7th semester course, École Centrale Paris.

11 lectures - 22 teaching hours, attended by 35-45 students annually.

The course introduces basic concepts from signals and systems (Frequency-domain analysis of Signals and Systems, Modulation and Gabor filters, Sampling, the Discrete-Time Fourier Transform, the Z-transform, the Fast Fourier Transform) and elements of random signals

(Autoregressive-Moving Average Processes, the Linear Predictive Coding model, Wiener and Kalman filtering).

Introduction to Computer Vision (2009-)

8th semester course, École Centrale Paris.

11 lectures - 22 teaching hours, attended by 20-30 students annually.

The course covers techniques for image analysis (Filterbanks, Scale-Space and Partial Differential Equations), energy minimization (Calculus of Variations and Curve Evolution, Markov Random Fields), and category modeling (Active Appearance Models, Deformable Part Models, Bag-of-Words models). Applications include image denoising, inpainting, feature detection, texture analysis, image segmentation, motion estimation, object detection and tracking.

PhD Student Supervision

Haithem Boussaid, École Centrale Paris (2010-)

Co-advised with Nikos Paragios.

Topic: Learning deformable models for medical image analysis.

Siddhartha Chandra, École Centrale Paris (2014-)

Co-advised with Pawan Kumar.

Topic: Efficient Learning and Optimization for 3D Visual Data.

Stefan Kinauer, École Centrale Paris (2014-)

Topic: Surface-based representations for high-level vision.

Stavros Tsogkas, École Centrale Paris (2011-)

Topic: Shape-based optimization for object category detection.

Olivier Teboul, École Centrale Paris (2008-2011)

Co-advised with Nikos Paragios.

Topic: Reinforcement learning-based parsing of building facades with shape grammars.

Eduard Trulls, Universitat Polytechnica de Catalunya (2012-)

Advisors: Francesc Moreno and Alberto Sanfeliu.

Topic: Dense segmentation-aware descriptors for matching and recognition.

Michalis Raptis, University of California at Los Angeles (2009-2011)

Advisor: Stefano Soatto.

Topic: Mid-level video models for action recognition and localization.

Master and Intern Student Supervision

Siddhartha Chandra, École Centrale Paris (2011)

Topic: Descriptor matching for RGB-D data.

Co-advised with Pawan Kumar.

Stavros Tsogkas, École Centrale Paris (2011)

Topic: Learning symmetry detection.

Ishan Misra, École Centrale Paris (2012)

Topic: Groupwise shape-from-shading.

Aman Bindal, École Centrale Paris (2009)

Topic: Real-time jingle detection in video streams.

Thesis Committees

Anastasios Roussos, National Technical University of Athens (2010)

Topic: Nonlinear Diffusion in Computer Vision and Statistical Shape Models, with Applications in Image Analysis of Articulators of Voiced and Signed Speech.

Olivier Teboul, École Centrale Paris (2011)

Topic: Shape Grammar Parsing: Application to Image-based Modeling.

Christos Pappas, University of Ioannina (on-going)

Topic: Scene Recognition and Semantic Segmentation.

Research Funding

FP7 ICT-9 Project RECONFIG (2013-2016)

Cognitive, Decentralized Coordination of Heterogeneous Multi-Robot Systems via Reconfigurable Task Planning.

Joint research project with KTH (Sweden), U. Aalto (Finland), NTUA (Greece)

Our goal is to use 3D object understanding and localization as a medium for multi-agent coordination and collaboration.

Funding: 400K Euros for ECP, 2.300K Euros total.

FP7 ICT-9 Project MOBOT (2013-2016)

Intelligent Active MObility Assistance RoBOT integrating Multimodal Sensory Processing, Proactive Autonomy and Adaptive Interaction.

Joint research project with TU Munich, U. Heidelberg (Germany), Accrea (Poland), NTUA-ICCS, ILSP (Greece)

Our goal is to equip robotic walking assistants with 3D pose estimation and action recognition capabilities to enable the proactive assistance of elderly users with walking disabilities.

Funding: 300K Euros for INRIA, 3.100K Euros total.

ANR-JCJC HiCoRe (2010-2014)

HIerarchical COmpositional REpresentations for computer vision.

Young Researcher Award of the French National Research Foundation

Our goal is to develop computational mechanisms for inference and learning in hierarchical, shape-based object representations.

Funding: 168K Euros for ECP.

Distinctions and Awards

Reviewer award, IEEE Conference on Computer Vision and Pattern Recognition, 2013.

Reviewer award, International Conference on Computer Vision, 2009.

Bodossaki foundation scholarship as a graduate student.

Obtained in 4 years the 5-year NTUA M. Eng. Degree, ranking in the top 2%.

Paris Kanellakis award for highest ranking student in the Computer Science major.

National scholarship foundation awards as an undergraduate.

Academic Service

Associate Editor

Image and Video Computing Journal (2011-).

Journal Reviewer

International Journal of Computer Vision (2009-).

IEEE Transactions on Pattern Analysis and Machine Intelligence (2006-).

IEEE Transactions on Image Processing (2006-).

IEEE Transactions on Systems, Man and Cybernetics, B (2011).

IEEE Transactions on Neural Networks (2010).

Computer Vision and Image Understanding (2008-).

Image and Video Computing Journal (2010).

Computer Speech and Language (2009).

EURASIP Journal of Image and Video Processing (2012).

Machine Vision and Applications (2013).

Program Chair

IEEE Workshop on Perceptual Organization in Computer Vision (POCV), 2012.

Area Chair

IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2012.

Program Committee

Int'l. Conf. on Computer Vision (ICCV) 2007, 2009, 2011, 2013.

IEEE Conf. on Computer Vision and Pattern Recognition (CVPR) 2009, 2010, 2011, 2013.

European Conf. on Computer Vision (ECCV) 2010.

Asian Conf. on Computer Vision (ACCV) 2009, 2010, 2012.

Int'l. Conf. on Artificial Intelligence and Statistics (AISTATS) 2012, 2014.

Int'l. Conf. on Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR) 2007, 2009, 2011, 2013.

Int'l. Workshop on Vision, Modeling and Visualization, 2013.

ACCV Workshop on Detection and Tracking in Challenging Environments, 2012.

Int'l. Workshop on Stochastic Image Grammars 2009, 2011.

IEEE Workshop on Perceptual Organization in Computer Vision (POCV), 2010.

Int'l Symposium on Visual Computing, 2009, 2010, 2011.

Indian Conference on Vision Graphics and Image Processing (ICVGIP), 2008, 2010.

Grant Reviewer

European Union, ERC awards, 2010.

Swiss National Science Foundation, 2013.

Software Releases

Dual-Tree Branch-and-Bound for Deformable Part Models.

<http://vision.mas.ecp.fr/Personnel/iasonas/dpms.html>

Fractional Programming Grouping.

<http://vision.mas.ecp.fr/Personnel/iasonas/contours.html>

Dense Segmentation-Aware Descriptors (E. Trulls).

<http://www.iri.upc.edu/people/etrulls/#code>

Dense Scale-Invariant Descriptors for images and surfaces (with M. Bronstein).

<http://vision.mas.ecp.fr/Personnel/iasonas/descriptors.html>

Learning-based symmetry detection, code and benchmark (S. Tsogkas).

<http://www.centrale-ponts.fr/personnel/tsogkas/code.html>
Mid-level representations for action recognition, code and benchmark (M. Raptis).
http://vision.ucla.edu/~raptis/action_parts.html
Facade Parsing with Reinforcement Learning, code and benchmark (O. Teboul et. al.).
<http://vision.mas.ecp.fr/Personnel/teboul/grapesPage/index.php>
Modulation Features for Texture Analysis (with G. Evangelopoulos).
<http://cvsp.cs.ntua.gr/software/texture/>
Scale-Invariant Edges and Ridges.
<http://vision.mas.ecp.fr/Personnel/iasonas/sketch.html>

Invited Presentations and Academic Visits

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| November 2013 | University of Oulu |
| July 2013 | UCLA, IPAM summer school on computer vision |
| June 2013 | Stony Brook University |
| April 2013 | USI Lugano, visiting faculty (with Prof. M. Bronstein) |
| April 2013 | Zuse Institute Berlin, Graphics Seminar |
| July 2012 | JHU Summer School on Human Language Technology “Towards a Detailed Understanding of Visual Scenes” collaboration project with the University of Oxford, Chicago, and Oulu |
| June 2012 | Carnegie Mellon University |
| June 2012 | École Normale Supérieure/Willow Group |
| June 2012 | National Technical University of Athens |
| July 2011 | ETH, Visual Computing Lunch |
| July 2011 | USI Lugano, visiting faculty (with Prof. M. Bronstein) |
| June 2011 | CVPR workshop on Symmetry Detection from Real World Images |
| January 2011 | Oxford University, Visual Geometry Group |
| June 2010 | UCLA, Center for Image and Vision Sciences |
| Aprin 2009 | National Technical University of Athens |
| September 2008 | UCLA, Image Processing Seminar |
| June 2008 | UC Irvine, Artificial Intelligence Seminar |
| May 2008 | École Centrale Paris |
| April 2008 | Berkeley, Computer Vision Group |
| April 2008 | Caltech, Computational Vision Lab |
| March 2008 | Rutgers University, Dept. of Computer Science |
| March 2008 | University of Pennsylvania, GRASP Laboratory |
| February 2008 | Johns Hopkins University, Center for Imaging Science |
| February 2008 | Stony Brook University, Image Analysis Lab |
| June 2007 | Lotus Hill Institute |
| October 2005 | UCLA, Center for Image and Vision Sciences |
| June 2003 | INRIA Sophia-Antipolis, Odyssee Group |

Personal

Date of Birth: 8th January 1980.
Languages: Greek, English, French, German.
Affiliations: IEEE Member, Technical Chamber of Greece.

Publications

Journal articles

- 1 O. Teboul, I. Kokkinos, S. Loic, P. Katsourakis and N. Paragios, “*Parsing Facades with Shape Grammars and Reinforcement Learning.*”, IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 35(7), pp. 1744-1756, 2013.
- 2 I. Kokkinos and A. Yuille, “*Inference and Learning with Hierarchical Shape Models.*”, International Journal of Computer Vision , Vol. 92(2), pp. 201-225, 2011.
- 3 I. Kokkinos and P. Maragos, “*Synergy Between Image Segmentation and Object Recognition Using the Expectation Maximization Algorithm.*”, IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 31(8), pp. 1486-1501, 2009.
- 4 I. Kokkinos, G. Evangelopoulos and P. Maragos, “*Texture Analysis and Segmentation Using Modulation Features, Generative Models and Weighted Curve Evolution.*”, IEEE Trans. on Pattern Analysis and Machine Intelligence, Vol. 31(1), pp. 142-157, 2009.
- 5 I. Kokkinos, R. Deriche, O. Faugeras and P. Maragos, “*Computational Analysis and Learning for a Biologically Motivated Model of Boundary Detection.*”, Neurocomputing, Vol. 71(10-12), pp. 1798-1812, 2008.
- 6 I. Kokkinos and P. Maragos, “*Nonlinear Speech Analysis Using Models for Chaotic Systems.*”, IEEE Trans. on Speech and Audio Processing, Vol. 13(6), pp. 1098-1109, 2005.

Double-blind, peer-reviewed conference articles (acceptance rate 20-30%)

- 7 I. Kokkinos, “*Shufflets: Shared Mid-level Parts for Fast Multi-Category Detection*” Proc. Int.l Conf. on Computer Vision (ICCV), 2013.
- 8 E. Trulls, I. Kokkinos, A. Sanfeliu and F. Moreno, “*Dense Segmentation-Aware Descriptors*” In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2013.
- 9 S. Tsogkas and I. Kokkinos, “*Learning-based Symmetry Detection in Natural Images*” In Proc. European Conf. on Computer Vision (ECCV), 2012.
- 10 I. Kokkinos, M. Bronstein, R. Littman and A. Bronstein “*Intrinsic Shape Context Descriptors for Deformable Shapes*” In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2012.
- 11 M. Raptis, I. Kokkinos, S. Soatto “*Discovering Discriminative Action Parts from Mid-Level Video Representations*” In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2012.
- 12 I. Kokkinos, “*Rapid Deformable Object Detection using Dual Tree Branch and Bound*” In Proc. Neural Information Processing Systems (NIPS), 2011.
- 13 O. Teboul, I. Kokkinos, L. Simon, P. Koutsourakis, and N. Paragios, “*Shape Grammar Parsing via Reinforcement Learning*” In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2011.
- 14 I. Kokkinos, “*Boundary Detection using F-measure, Filter- and Feature Boost.*”, In Proc. European Conference in Computer Vision (ECCV), 2010.

- 15 I. Kokkinos, “*Highly Accurate Boundary Detection and Grouping.*”, In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2010.
- 16 M. Bronstein and I. Kokkinos, “*Scale-invariant heat kernel signatures for non-rigid shape recognition.*”, In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2010.
- 17 I. Kokkinos and A. Yuille, “*HOP: Hierarchical Object Parsing.*”, In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2009.
- 18 I. Kokkinos and A. Yuille, “*Scale Invariance without Scale Selection.*”, In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2008.
- 19 I. Kokkinos and A. Yuille, “*Unsupervised Learning of Object Deformation Models.*”, In Proc. IEEE Int’l. Conf. on Computer Vision (ICCV), 2007.
- 20 I. Kokkinos, P. Maragos and A. Yuille, “*Bottom-Up and Top-Down Object Detection Using Primal Sketch Features and Graphical Models.*”, In Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR), 2006.
- 21 I. Kokkinos and P. Maragos, “*An Expectation Maximization Approach to the Synergy Between Image Segmentation and Object Categorization.*”, In Proc. IEEE Int’l. Conf. on Computer Vision (ICCV), 2005.
- 22 I. Kokkinos, R. Deriche, P. Maragos and O. Faugeras, “*A Biologically Motivated and Computationally Tractable Model of Low- and Mid- Level Vision Tasks.*”, In Proc. European Conference on Computer Vision (ECCV), 2004.

Double-blind, peer-reviewed conference and workshop articles

- 23 H. Boussaid, I. Kokkinos, and N. Paragios “*Discriminative Learning of Deformable Contour Models*”, International Symposium on Biomedical Imaging (ISBI), 2014.
- 24 H. Boussaid, I. Kokkinos, and N. Paragios “*Rapid Mode Estimation for 3D MRI Brain Tumor Segmentation*”, Energy Minimization Methods in Computer Vision and Pattern Recognition (EMMCVPR), 2013.
- 25 I. Kokkinos, “*Bounding Part Scores for Rapid Detection with Deformable Part Models*”, Proc. Workshop on Parts and Attributes, in conjunction with ECCV, 2012.
- 26 H. Boussaid, S.Kadoury, I. Kokkinos, J.-Y. Lazenec, G. Zheng, N. Paragios, “*3D Model-based Reconstruction of the Proximal Femur from Low-dose Biplanar X-Ray Images*”, Proc. British Machine Vision Conference (BMVC), 2011.
- 27 A. M. Bronstein, M. M. Bronstein, B. Bustos, U. Castellani, M. Crisani, B. Falcidieno, L. J. Guibas, I. Kokkinos, V. Murino, M. Ovsjanikov, G. Patan, I. Sipiran, M. Spagnuolo, J. Sun, “*SHREC 2010: robust feature detection and description benchmark.*”, Proc. EUROGRAPHICS Workshop on 3D Object Retrieval (3DOR), 2010.
- 28 A. M. Bronstein, M. M. Bronstein, U. Castellani, B. Falcidieno, A. Fusiello, A. Godil, L. J. Guibas, I. Kokkinos, Z. Lian, M. Ovsjanikov, G. Patan, M. Spagnuolo, R. Toldo, “*SHREC 2010: robust large-scale shape retrieval benchmark.*”, Proc. EUROGRAPHICS Workshop on 3D Object Retrieval (3DOR), 2010.
- 29 I. Kokkinos and A. Yuille, “*Inference and Learning with Hierarchical Compositional Models.*”, In Proc. 1st Int’l. Workshop on Stochastic Image Grammars, in conjunction with CVPR 2009.

- 30 I. Kokkinos and P. Maragos, “A Detection-Theoretic Approach to Texture and Edge Discrimination.”, In Proc. 4th Int’l. Workshop on Texture Analysis and Synthesis, in conjunction with ICCV 2005.
- 31 G. Evangelopoulos, I. Kokkinos and P. Maragos, “Advances in Variational Image Segmentation using AM-FM models: Regularized Demodulation and Probabilistic Cue Integration.”, In Proc. 3rd IEEE Variational and Level-Set Methods (VLSM) Workshop, in conjunction with ICCV 2005.
- 32 I. Kokkinos, G. Evangelopoulos and P. Maragos, “Advances in Texture Analysis: Energy Dominant Component & Multiple Hypothesis Testing.”, In Proc. IEEE Int’l. Conf. on Image Processing (ICIP), 2004.
- 33 I. Kokkinos, G. Evangelopoulos and P. Maragos, “Modulation-Feature based Textured Image Segmentation Using Curve Evolution.”, In Proc. IEEE Int’l. Conf. on Image Processing (ICIP), 2004.
- 34 V. Pitsikalis, I. Kokkinos and P. Maragos, “Nonlinear Analysis of Speech Signals: Generalized Dimensions and Lyapunov Exponents.”, In Proc. European Conference on Speech Communication and Technology (EUROSPEECH), 2003.
- 35 P. Maragos, A. Dimakis and I. Kokkinos. “Some Advances in Nonlinear Speech Modeling Using Modulations Fractals and Chaos.” In Proc. IEEE Int’l. Conf. on Digital Signal Processing, 2002.

Theses and reports

- 36 I. Kokkinos, *Learning and Optimization for Shape-based representations*, HDR, Université Paris-Est, 2013.
- 37 I. Kokkinos, M. Bronstein and A. Yuille. *Dense Scale-Invariant Descriptors for Images and Surfaces*, INRIA Research Report RR-7914, 2012.
- 38 I. Kokkinos. *Rapid Deformable Object Detection using Bounding-based Techniques*, INRIA Research Report RR-7940, 2012.
- 39 I. Kokkinos, R. Deriche, Olivier Faugeras and P. Maragos, *Towards Bridging the Gap Between Biological and Computational Segmentation*, INRIA Research Report RR-6317, 2007.
- 40 I. Kokkinos. *Synergy between Image Segmentation and Object Recognition using Geometrical and Statistical Computer Vision Techniques*, Ph.D. Thesis, School of Electrical and Computer Engineering, National Technical University of Athens, 2006.
- 41 I. Kokkinos. *Nonlinear Speech Processing Using Models for Chaotic Systems*, Diploma Thesis, School of Electrical and Computer Engineering, National Technical University of Athens, 2001.