

CURRICULUM VITAE

Giorgos Sfikas

Computer scientist



PERSONAL INFORMATION

Date of birth	January 19, 1982
Place of birth	Athens, Greece
Nationality:	Greek
Residence address:	Alamanas 80 TK10441
Residence city:	Athens, Greece
Phone:	+30 6949 47 26 35
E-mail:	georges.sfikas@gmail.com sfikas@cs.uoi.gr

ACADEMIC FORMATION

PhD in Computer science / Image Processing and Computer Vision (Signal, Images et Vision)

University of Strasbourg, Strasbourg, France, September 2012

Thesis title: “Non-linear statistical models for shape analysis : application to brain imaging” (“Modèles statistiques non linéaires pour l'analyse de formes : application à l'imagerie cérébrale ”)

Msc in Computer science

University of Ioannina, Ioannina, Greece, June 2007

Msc thesis title: “Statistical methods for content-based image retrieval”

BA in History and Archaeology

University of Ioannina, Ioannina, Greece, December 2014

BSc in Computer Science

University of Ioannina, Ioannina, Greece, October 2004

WORK EXPERIENCE¹

Feb 2021 --	CIL/IIT laboratory, NCSR “Demokritos” (Athens, Greece) Research engineer
Jan 2020 --	Image processing and analysis laboratory, Dept. of Comp. Science and Engineering, University of Ioannina (Ioannina, Greece) Research engineer
Nov 2018 – Jun 2020	ITI laboratory, CERTH (Ioannina, Greece)

¹ Non-Teaching

Apr 2014 – Oct 2018	Research engineer CIL/IIT laboratory, NCSR “Demokritos” (Athens, Greece)
Mar 2013 – Dec 2013	Research engineer Greek armed forces
Sep 2011 – Aug 2012	Specialty: Network administrator – IT professional University of Strasbourg (Strasbourg, France) Teaching and laboratory supervision of undergraduates in the Computer Science department
Oct 2008 – Sep 2011	LSIIT/MIV (iCube) Laboratory (Strasbourg, France) Research Engineer
Sep 2005 – Sep 2008	IPAN Laboratory (Ioannina, Greece) Research Engineer / Laboratory & Teaching assistant
Jun 2003 – Sep 2003	Aid engineering co. (Athens, Greece) Programmer
Sep 2000 – Aug 2001	CS support team, University of Ioannina (Ioannina, Greece) Network administrator

TEACHING EXPERIENCE

Sep 2020 – Aug 2021	Visiting Lecturer Courses taught: Graphics, Analytic Geometry Department of Surveying and Geoinformatics Engineering (University of West Attica, Athens, Greece)
Sep 2016 – Aug 2020	Visiting Lecturer Courses taught: Digital Image Processing, Computer Vision, Linear Algebra Computer Science & Engineering department (University of Ioannina, Ioannina, Greece)
Sep 2011 – Jun 2012	Laboratory assistant Courses assisted : Digital Image Processing, Introduction to C / C++ École Nationale Supérieure de Physique de Strasbourg (Strasbourg, France)
Sep 2005 – Jan 2006	Teaching assistant Course assisted: Introduction to Probability Computer Science & Engineering department (University of Ioannina, Ioannina, Greece)
Sep 2004 – Jan 2005	Laboratory assistant Course assisted: Introduction to Programming Computer Science & Engineering department (University of Ioannina, Ioannina, Greece)

PARTICIPATION IN RESEARCH PROJECTS

Feb 2021 –	CULDILE (Research – Create – Innovate / NSRF funded) Cultural dimensions of deep learning.
Jan 2020 –	BESSARION (Open Innovation in Culture / NSRF funded - Authored the research project proposal) Byzantine Electronic Scholar on-the-Spot: Automatic inscription analysis, transcription and translation.
May 2019 – Jun 2020	BIMERR (Horizon 2020 / European Commission funded) Aiming at enhanced Building Information Modelling (BIM) and the Architecture, Engineering & Construction (AEC) field: Research on employing novel computer vision and machine learning techniques to develop a new toolkit to support renovation stakeholders.
Nov 2018 – Jun 2020	eDREAM (Horizon 2020 / European Commission funded) Enabling new demand response advanced, market oriented and secure technologies, solutions and business models: Research on computer vision techniques for multimodal (RGB/IR) processing, captured by Unmanned Automated Vehicles in order to estimate Demand Response potential.
Jun 2017 – Nov 2017	COR-skills (Erasmus+ KA2 program / European Commission funded) Collaborative learning for patient-focused interventions in gait rehabilitation after orthopedic surgery.
Jan 2016 – Oct 2018	READ (Horizon 2020 / European Commission funded) Recognition and Enrichment of Archival Documents. Computer vision techniques

Sep 2015 – Dec 2015	for automatic handwriting recognition and keyword spotting. SYNAISTHISI (EPAN II / NSRF funded)
Apr 2014 – Apr 2015	Smart networks for collection and processing of data for energy management. OldDocPro (ARISTEIA / NSRF funded)
	Novel techniques for automatic recognition of historical greek manuscripts. Research on computer vision methods for document image processing.

STUDENT CO-SUPERVISION²

<i>Student name</i>	<i>Thesis title</i>
Panagiotis Kouzougliadis	Diploma Thesis, “Automatic Video Colorization using 3D conditional Generative Adversarial Networks”
Panagiotis Dimitrakopoulos	Diploma Thesis, “Cell Classification and Nuclei Detection Using Deep Convolutional Neural Networks”
Giorgos Koukouzas	Diploma Thesis, “Image Segmentation in the context of autonomous driving using Mask R-Convolutional Neural Network”
Alexandros Giohalas	Diploma Thesis, “Keyword Spotting using Variational Autoencoders and PHOC networks”
Giorgos Tsigkas	Diploma Thesis, “Automatic detection of prehistoric rock paintings using computer vision methods”
Victor Megir	Diploma Thesis, “Using Gaussian Mixture Models with Deep Neural Network features for Image Segmentation”
Angelos Katsaliros	Diploma Thesis, “Road crack segmentation and detection with quaternion neural networks”
Leonidas Zafeiriou	Diploma Thesis, “Keyword Spotting using Quaternions”
Christina Kourou	Diploma Thesis, “Image Retrieval for Byzantine Art using Deep Features and Mixture Models”
Ioannis Georvasilis	Diploma Thesis, “Inpainting text instances with Generative Adversarial Networks” (in progress)
Giorgos Samios	Diploma Thesis, “Image colorization with deep learning” (in progress)
Christos Mpatsilas	Diploma Thesis, “Text detection with Quaternion Generative Adversarial Networks” (in progress)
Andreas Konstantinidis	Diploma Thesis, “Deep learning for optical flow” (in progress)
Thodoris Tranos	Diploma Thesis, “Image analysis with Capsule Networks” (in progress)
Eirinaios Kyritsis	Diploma Thesis, “A self-guided autonomous vehicle with a Convolutional Neural Network running on a Raspberry Pi”
Panagiotis Dimitrakopoulos	Msc Thesis, “Variational Bayesian Blind Color Deconvolution of Histopathological Images”
Giorgos Tsigkas	PhD Thesis, “Image understanding in the context of cultural heritage” (in progress)
Iasonas Panagos	PhD Thesis, “Lip-reading using probabilistic inference and deep learning” (in progress)
Panagiotis Dimitrakopoulos	PhD Thesis, “Variational methods for image understanding” (in progress)

PROGRAMMING SKILLS

Languages	Python, C/C++, Matlab, Java, Ruby, Rust Tensorflow, Pytorch Qt, Visual Studio Git
Web	Django, HTML5/CSS3, Javascript, Joomla
Operating systems	Ubuntu/Debian Linux, Raspbian, Windows, Windows server, Solaris

² All students co-supervised in collaboration with Professor Christophoros Nikou, at the Department of Computer Science and Engineering, University of Ioannina, Greece.

CODE SAMPLES @ GITHUB

Main page :
<https://github.com/sfikas/>

Teaching Digital Image
processing and Computer
Vision page :
<https://github.com/dip-course/>

Available code includes :

- Full (front-end / back-end) implementation of a research competitions website, written in Django/Python.
- Code implementing co-authored models (see 'Research' section of this document), written in Matlab and Python.

Available code includes :

- Code examples used in teaching, demonstrating use of Python libraries for data science and computer vision (numpy, scipy, tensorflow, opencv, etc.)
- Available as Python executables and Jupyter notebooks.

LANGUAGE SKILLS

Greek (native), English (fluent), French (excellent)

RESEARCH

Interests

Pattern Recognition, Machine learning, Computer Vision, Shape analysis, Medical Imaging, Document Image Analysis, Image Segmentation, Computing and Cultural heritage.

Publications

Peer-reviewed publications on international journals

[J1] G.Sfikas, C.Nikou, N.P.Galatsanos, C.Heinrich: "Spatially varying mixtures incorporating line processes for image segmentation", **Journal of Mathematical Imaging and Vision (JMIV)**, vol. 36(2), pp. 91-110, 2010

[J2] G.Sfikas, C.Heinrich, J.Zallat, C.Nikou, N.P.Galatsanos: "Recovery of polarimetric Stokes images by spatial mixture models", **Journal of the Optical Society of America A (JOSA A)**, vol. 28(3), pp. 465-474, 2011

[J3] N.Philippi, V.Noblet, A.Botzung, O.Desprès, F.Renard, G.Sfikas, B.Cretin, S.Kremer, L.Manning, F.Blanc: "MRI-based volumetry correlates of autobiographical memory in Alzheimer's disease", **PloS one** 7 (10), e46200, 2012

[J4] S.Faisan, C.Heinrich, G.Sfikas, J.Zallat: "Estimation of Mueller matrices using non-local means filtering", **Optics Express** 21 (4), pp. 4424-4438, 2013

[J5] A.P.Giotis, G.Sfikas, B.Gatos, C.Nikou: "A survey of document image word spotting techniques", **Pattern Recognition**, vol.68, pp. 310-332, 2017

[J6] K.Papadimitriou, G.Sfikas, C.Nikou: "Tomographic Image Reconstruction with a Spatially Varying Gamma mixture prior", **Journal of Mathematical Imaging and Vision (JMIV)**, vol. 60(8), pp. 1355-1365, 2018

[J7] G. Muehlberger, L.Seaward, M. Terras, S. Ares Oliveira, V. Bosch, B. Vicente, C. Maximilian, S. Colutto, H. Déjean, M. Diem, S. Fiel, B. Gatos, T. Grüning, A. Greinöcker, G. Hackl, V. Haukkovaara, G. Heyer, L. Hirvonen, T. Hodel, M. Jokinen, P. Kahle, M. Kallio, F. Kaplan, F. Kleber, R. Labahn, E.M. Lang, S. Laube, G. Leifert, G. Louloudis, R. McNicholl, JL Meunier, J. Michael, EP Mühlbauer, N. ElenaPhilipp, I. Pratikakis,

J.P.Puigcerver H.Putz, G. Retsinas, V. Romero, R. Sablatnig, JA. Sánchez, P. Schofield, G. Sfikas, C. Sieber, N. Stamatopoulos, T. Strauss, T. Terbul, A. Toselli, B. Ulreich, M. Villegas, E. Vidal, JW. Walcher, M. Weidemann, H. Wurster, K. Zagoris, Konstantinos, "Transforming Scholarship in the Archives Through Handwritten Text Recognition: Transkribus as a Case Study", **Journal of Documentation**, vol. 75(5), pp. 954-976., January 2019

[J8] G. Tsigkas, G. Sfikas, A. Pasialis, A. Vlachopoulos, C. Nikou: "Markerless detection of ancient rock carvings in the wild: rock art in Vathy, Astypalaia", **Pattern Recognition Letters**, vol. 135, pp. 337-345, 2020

Peer-reviewed publications on international conferences

[C1] G.Sfikas, C.Constantinopoulos, A.Likas, N.P.Galatsanos: "An Analytic Distance Metric for Gaussian Mixture Models with Application in Image Retrieval", **International Conference on Artificial Neural Networks (ICANN)**, Warsaw, Poland, September 2005

[C2] G.Sfikas, C.Nikou, N.P.Galatsanos: "Robust image segmentation with mixtures of student's t-distributions", **IEEE International Conference on Image Processing (ICIP)**, San Antonio, USA, September 2007

[C3] G.Sfikas, C.Nikou, N.P.Galatsanos: "Edge-preserving spatially-varying mixtures for image segmentation", **IEEE Computer Vision and Pattern Recognition (CVPR)**, Anchorage, USA, June 2008

[C4] G.Sfikas, C.Nikou, N.P.Galatsanos, C.Heinrich: "MR Brain Tissue classification using an edge-preserving spatially variant Bayesian mixture model", **International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)**, New York, USA, September 2008

[C5] G.Sfikas, C.Nikou, C.Heinrich, N.P.Galatsanos: "On optimization of probability vector random fields used for image segmentation", **IEEE International Workshop on Machine Learning for Signal Processing (MLSP)**, Grenoble, France, September 2009

[C6] G.Sfikas, C.Heinrich, J.Zallat, C.Nikou, N.P.Galatsanos: "Joint recovery and segmentation of polarimetric images using a compound MRF and mixture modeling", **IEEE International Conference on Image Processing (ICIP)**, Cairo, Egypt, November 2009

[C7] G.Sfikas, C.Heinrich, C.Nikou: "Multiple atlas inference and population analysis with spectral clustering", **IEEE International Conference on Pattern Recognition (ICPR)**, Istanbul, Turkey, August 2010

[C8] G.Sfikas, C.Nikou, N.P.Galatsanos, C.Heinrich: "Majorization-Minimization mixture model determination in image segmentation", **IEEE Computer Vision and Pattern Recognition (CVPR)**, Colorado Springs, USA, June 2011

[C9] G.Sfikas, A.P.Giotis, G.Louloudis, B.Gatos: "Using Attributes for Word Spotting and Recognition in Polytonic Greek documents", **International Conference on Document Analysis and Recognition (ICDAR)**, Nancy, France, August 2015

[C10] B.Gatos, N.Stamatopoulos, G.Louloudis, G.Sfikas, G.Retsinas, F.Simistira, V.Papavassiliou, V.Katsouros: "GRPPLY-DB: An old Greek polytonic document image database", **International Conference on Document Analysis and Recognition (ICDAR)**, Nancy, France, August 2015

[C11] A.P.Giotis, G.Sfikas, C.Nikou, B.Gatos: "Shape-based Word Spotting in Handwritten Document Images", **International Conference on Document Analysis and Recognition (ICDAR)**, Nancy, France, August 2015

[C12] G.Louloudis, G.Sfikas, N.Stamatopoulos, B.Gatos: "Word Segmentation using the Student's-t distribution", **International Workshop on Document Analysis and Systems (DAS)**, Santorini, Greece, April 2016

[C13] G.Sfikas, C.Akasiadis, E.Spyrou: "Creating a smart room using an IoT approach", **Workshop on Artificial Intelligence and Internet of Things (AI-IoT), in conjunction with the 9th Hellenic Conference on Artificial Intelligence (SETN)**, Thessaloniki, Greece, May 2016

[C14] G.Sfikas, G.Louloudis, N.Stamatopoulos, B.Gatos: "Bayesian mixture models on connected components for Newspaper article segmentation", **ACM Symposium on Document Engineering (DocEng)**, Vienna, Austria, September 2016

[C15] G.Sfikas, G.Retsinas, B.Gatos: "Zoning Aggregated Hypercolumns for Keyword Spotting", **International Conference on Frontiers in Handwriting Recognition (ICFHR)**, Shenzhen, China, October 2016

- [C16] G.Sfikas, C.Nikou: "Bayesian Multiview Manifold Learning applied to Hippocampus Shape and Clinical Score Data", **3rd workshop on Bayesian and Graphical Models in Biomedical Imaging, held in conjunction with the 19th International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI)**, Athens, Greece, October 2016
- [C17] G.Retsinas, G.Sfikas, B.Gatos: "Transferable Deep Features for Keyword Spotting", **International Workshop on Computational Intelligence for Multimedia Understanding, held in conjunction with the 25th European Signal Processing Conference (EUSIPCO)**, Kos, Greece, September 2017
- [C18] G.Sfikas, B.Gatos, C.Nikou: "SemiCCA: A New Semi-Supervised Probabilistic CCA Model for Keyword Spotting", **International Conference on Image processing (ICIP)**, China, September 2017
- [C19] G.Retsinas, G.Louloudis, N.Stamatopoulos, G.Sfikas, B.Gatos, "Nonlinear Manifold Embedding on Keyword Spotting using t-SNE", **International Conference on Document Analysis and Recognition (ICDAR)**, Kyoto, Japan, November 2017
- [C20] G.Sfikas, G.Retsinas, B.Gatos, "A PHOC Decoder for Lexicon-free Handwriting Word Recognition", **International Conference on Document Analysis and Recognition (ICDAR)**, Kyoto, Japan, November 2017
- [C21] G.Retsinas, G.Sfikas, N.Stamatopoulos, G.Louloudis, B.Gatos, "Exploring critical aspects of CNN-based keyword spotting. A PHOCNet study", **International Workshop on Document Analysis and Systems (DAS)**, Vienna, Austria, April 2018
- [C22] G.Retsinas, G.Sfikas, G.Louloudis, N.Stamatopoulos, B.Gatos, "Compact deep descriptors for keyword spotting", **International Conference on Frontiers in Handwriting Recognition (ICFHR)**, Niagara Falls, USA, August 2018
- [C23] M.Plissiti, P.Dimitrakopoulos, G.Sfikas, C.Nikou, O.Krikoni, A.Charchanti, "SIPAKMED: A new dataset for feature and image-based classification of normal and pathological cervical cells in Pap smear images", **IEEE International Conference on Image Processing (ICIP)**, Athens, Greece, October 2018
- [C24] G.Retsinas, G.Louloudis, N.Stamatopoulos, G.Sfikas, B.Gatos, "An Alternative Deep Feature Approach to Line Level Keyword Spotting", **IEEE Computer Vision and Pattern recognition (CVPR)**, Long Beach (CA), USA, June 2019
- [C25] G.Sfikas, A.Noula, J.Patacas, D.Ioannidis, D.Tzovaras, "Building thermal output determination using visible spectrum and infrared inputs", **International Conference on Energy and Sustainable Futures (ICESF)**, Nottingham, United Kingdom, September 2019
- [C26] P.Kouzouglidis, G.Sfikas, C.Nikou, "Automatic Video Colorization using 3D Conditional Generative Adversarial Networks", **International Symposium on Visual Computing (ISVC)**, Lake Tahoe (NV), USA, October 2019
- [C27] P.Dimitrakopoulos, G.Sfikas, C.Nikou, "Nuclei Detection Using Residual Attention Feature Pyramid Networks", **IEEE International Conference on Bioinformatics and Bioengineering (BIBE)**, Athens, Greece, October 2019
- [C28] G.Sfikas, J.Patacas, C.Psarros, A.Noula, D.Ioannidis, D.Tzovaras, "A Deep Neural Network-based method for the detection and accurate thermography statistics estimation of aerially surveyed structures", **International Conference on Construction Applications of Virtual Reality (CONVR)**, Bangkok, Thailand, November 2019
- [C29] P.Dimitrakopoulos, G.Sfikas, C.Nikou, "Ising-GAN: Annotated Data Augmentation with a spatially constrained Generative Adversarial Network", **IEEE International Symposium on Biomedical Imaging (ISBI'20)**, Iowa City (IA), USA, April 2020
- [C30] P.Dimitrakopoulos, G.Sfikas, C.Nikou, "WInD: Wasserstein Inception Distance for Evaluating Generative Adversarial Network Performance", **IEEE International Conference on Acoustics, Speech, and Signal Processing (ICASSP '20)**, May 2020
- [C31] G.Sfikas, D.Ioannidis, D.Tzovaras, "Quaternionic keypoint description for multispectral imaging", **Hellenic Conference on Artificial Intelligence (SETN)**, September 2020
- [C32] G.Sfikas, D.Ioannidis, D.Tzovaras, "Quaternion Harris for Multispectral Keypoint Detection", **IEEE International conference on Image Processing (ICIP)**, October 2020
- [C33] V.Megir, G.Sfikas, A.Mekras, C.Nikou, D.Ioannidis, D.Tzovaras, "Salient object detection with pretrained Deeplab and k-means: Application to UAV-captured building imagery", 1st workshop on Pattern Recognition and Automation in Construction and the Built Environment (PRAConBE 2020), held in conjunction with the 25th International Conference on Pattern Recognition (ICPR), January 2021
- [C34] G.Sfikas, A.P.Giotis, G.Retsinas, C.Nikou, "Quaternion Generative Adversarial Networks for Inscription Detection in Byzantine Monuments", **2nd workshop on Pattern Recognition for Cultural Heritage (PatReCH 2020)**, held in conjunction with the 25th International Conference on Pattern Recognition (ICPR), January 2021

Book chapters

[BC1] B. Gatos, G. Louloudis, N. Stamatopoulos, G. Sfikas, “Historical Document Processing”, in **Handwriting: Recognition, Development and Analysis**, Editors: Byron Leite, Dantas Bezerra, Cleber Zanchettin, Alejandro H. Toselli and Giuseppe Pirlo, Chapter 3. Nova science publishers, 2017

[BC2] B. Gatos, G. Louloudis, N. Stamatopoulos, G. Retsinas, G. Sfikas, A. P. Giotis, F. Simistira-Liwicki, Vassilis Papavassiliou and Vassilis Katsouros, “OldDocPro: Old Greek Document Recognition”, in **Handwritten Historical Document Analysis, Recognition, and Retrieval – State of the Art and future trends**, Editors: Andreas Fischer, Marcus Liwicki, Rolf Ingold, Series in Machine Perception and Artificial Intelligence (Volume 89), November 2020

Reviewer for

- IEEE Transactions on Image Processing
- Computer Vision and Image Understanding
- Pattern Recognition
- Pattern Recognition Letters
- EURASIP Journal on Advances in Signal Processing
- Artificial Intelligence review
- Medical Image Computing and Computer Assisted Intervention (MICCAI)
- International Conference in Pattern Recognition (ICIP)
- International Conference in Pattern Recognition (ICPR)
- Hellenic Conference on Artificial Intelligence (SETN)
- European Signal Processing Conference (EUSIPCO)
- International Conference on Frontiers in Handwriting Recognition (ICFHR)
- International Conference on Document Analysis and Recognition (ICDAR)
- Digital Signal Processing
- MDPI Journal of Imaging
- Data Mining and Knowledge Discovery (DAMI)
- Journal of the Institution of Engineers (India): Series B

Seminars/summer schools

- ICVSS (International Computer Vision summer school: Machine learning for Computer Vision). Baia Samuele, Italy, 2009
- The Griphos project. Santorini, Greece, 2011

ORGANIZING COMMITTEES

- Co-chair of the ICPR2020 workshop “PRAConBE: Pattern Recognition and Automation in Construction & the Built Environment”

BOOK TRANSLATIONS

- Editor of the translation of H. Anton-C. Rorres, “Elementary Linear Algebra” into Greek (translation and editing currently in progress, to be published in 2021). Translation process organized by Gutenberg Editions.

HONORS AND AWARDS

- Paper selected for oral presentation in IEEE CVPR 2008 (top 3% of papers)
- Received best paper award in MICCAI 2016 workshop “Bayesian and Graphical Models in Biomedical Imaging”
- Received best student paper award in IEEE BIBE 2019