

Curriculum Vitae

November 2020

Lazaros Grammatikopoulos

Surveying Engineer, Ph.D.

Assistant Professor in Photogrammetry
Department of Surveying and Geoinformatics Engineering
University of West Attica (UniWA), Athens, Greece

1. Studies

- 1999** Rural and Surveying Engineer, Department of Rural & Surveying Engineering, National Technical University of Athens, Greece
- 2007** Ph.D., Department of Rural & Surveying Engineering, National Technical University of Athens, Greece
Dissertation: "*Geometric Information from Single Images in Photogrammetry and Computer Vision*"

2. Teaching

- Graduate Courses: Teaches, or participates in teaching, of the courses "*Analytic Geometry*", "*Photogrammetry II (Analytic Photogrammetry)*", "Processing and Visualization of 3D Data", "Mobile Mapping Systems – UAV" (Dept. of Surveying & Geoinformatics Engineering, UniWA)
- Postgraduate Courses: Teaches, or participates in teaching, of the courses "Photogrammetry and Computer Vision", "Processing and Visualization of 3D Data", "Mobile Mapping and UAV" of the Postgraduate Program *Geospatial Technologies* (UniWA); also participates in the course "Machine Vision" of the Postgraduate Program *Informatique, Synthèse d'Images et Conception Graphique – ISICG* (UniWA / University of Limoges, France)

3. Supervision of Diploma Thesis

Supervision or co-supervision of 62 graduate and postgraduate Diploma Theses at the Department of Surveying and Geoinformatics Engineering of UniWA.

1. Participation in Research Projects

- 2005** Development of Algorithms for the Automatic Generation of Accurate Photorealistic Models by Combining Photogrammetry, Image Processing and Laser Scanning – Application in the Documentation of Cultural Heritage (Financed within the “Archimedes II – Support of Research Groups of TEI” framework)
- 2005** Investigation of Modern Techniques and Automatic Approaches for the Generation of “True Orthoimages” with Application in the Documentation of a Roman Monument (Financed by the Greek Ministry of Culture).
- 2005** Development of educational software for the solution of basic Photogrammetric Problems. (Financed: Operational Programme for Education and Initial Vocational Training II – EPEAEK II)
- 2008** Generation of a Photogrammetric Structured-Light Scanner for the Reconstruction of Small Objects (Financed by the Technological Educational Institute of Athens)
- 2010** Internship of the Technological Educational Institute of Athens (Financed by EU and national funds)
- 2012** Participation in the project *Intelligent Pattern Recognition Techniques for the Development of Multimodal Representations of Urban Areas* (Financed within the “Archimedes III – Support of Research Groups of TEI” framework)
- 2013** *Urban Monitor*. Automatic detection and modelling of 2d and 3d changes in the urban environment from multi-modal, multi-temporal remote sensing data, (Financed by EU and NSRF)
- 2015** *3D HORO*. “Diffuse 3D Computing Vision to Increase the Effectiveness of 3D Digitization”. (Financed by EPEAEK II)
- 2017** “*INCASS – Inspection Capabilities for Enhanced Ship Safety*” (Financed by FP7-TRANSPORT)

- 2018** “*SOUP (SOilless culture UPgrade)*. Utilizing Robotic Systems and Computational Intelligence Technologies to Reduce Costs and Inputs in Hydroponic Cultures.”
(Financed by EPAnEK II)
- 2018** “*Travel Tycoon Greece (TTGR)*. Development of an innovative Business Simulation Game that will concern the management of the activities of a travel agency.”
(Financed by EPAnEK II)
- 2018** “*Virtual Diver*. Development of an integrated interactive platform of underwater virtual experiences for tourist and cultural institutions”
“Χρηματοδότηση: (ΕΠΑνΕΚ, ΕΡΕΥΝΩ – ΔΗΜΙΟΥΡΓΩ – ΚΑΙΝΟΤΟΜΩ)
- 2019** “MindSpaces. Art-driven adaptive outdoors and indoors design”
(Financed by EU Horizon 2020)
- 2020** “APROVIS3D - Analog processing of bioinspired Vision Sensors for 3D reconstruction”
(Financed by EU Horizon 2020 & FET /ERA-NET)

2 . Supervision and Evaluation of Ph.D. Dissertations

- Supervisor of the Ph.D. Dissertation of A. El Saer with working title “Combination of Deep Learning and V-SLAM Techniques Using Available 2D and 3D Metric Information”
- Member of the supervising committee of the Ph.D. Dissertation of S. Karypidis with working title “Development and Evaluation of Alternative Automatic UAV/Photogrammetric Methodologies for Regular Mapping in Geosciences, Focusing on Surface Mine Monitoring”
- Member of the supervising committee of the Ph.D. Dissertation of P. Chinis with working title “Contribution to study of prototype devices for measuring atmospheric parameters oriented for use in large wing Unmanned Aircrafts”.
- Member of the supervising committee of the Ph.D. Dissertation of K. Adam with working title “3D reconstruction, segmentation and classification of images and videos captured by satellite, aerial and terrestrial platforms” (Department of Rural & Surveying Engineering, National Technical University of Athens).
- Member of the supervising committee of the Ph.D. Dissertation of C. Stentoumis with working title “Implementation of algorithms for the automatic dense

reconstruction of 3D object using stereo images”. (Department of Rural & Surveying Engineering, National Technical University of Athens).

- Member of the evaluation committee of the Ph.D. Dissertation of A. Prokos with title “Development of a Photogrammetric Laser Scanner Using Additional Geometric Constraints” (National Technical University of Athens, 9/3/2012)
- Member of the evaluation committee of the Ph.D. Dissertation of D. Vasilaki with title “Research on the synergy of SAR data with heterogeneous data through using free-form linear feature matching (National Technical University of Athens, 28/10/2013)

3 . Reviewer of International Scientific Journals

Photogrammetric Record
Automation in Construction, Elsevier
Signal, Image and Video Processing, Elsevier
Remote Sensing, MDPI
Sensors, MDPI
Workshop ARTEMIS στο συνέδριο ECCV 2012.

4 . Citations in the International Literature

650 citations have been detected for my scientific publications (Google Scholar [link](#))

5 . Scientific Publications

- 2020 Panagiotou, E., Chochlakis, G., Grammatikopoulos, L., Charou, E. Generating Elevation Surface from a Single RGB Remotely Sensed Image Using Deep Learning. *Remote Sensing*, 12(12), p.2002.
- 2020 Kalisperakis, I., Mandilaras, T., El Saer, A., Stamatopoulou, P., Stentoumis, C., Bourou, S., Grammatikopoulos, L. A modular mobile mapping platform for complex indoor and outdoor environments. *The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, 43, pp.243-250.
- 2020 El Saer, A., Stentoumis, C., Kalisperakis, I., Grammatikopoulos, L., Nomikou, P. and Vlasopoulos, O. 3D reconstruction and mesh optimization of underwater spaces for virtual reality. *The International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, 43, pp.949-956.
- 2020 Ziwigga E., Panagiotopoulou A., Stefouli M., Charou E., Grammatikopoulos L., Bratsolis E., Madamopoulos N. Spatial resolution increase of remotely sensed images from mining areas with deep learning techniques. Study Area:

Amyntaio, *Second Workshop on Remote Sensing and Space Applications*, Geological Society of Greece, February 26, Athens, Greece.

- 2020 Mavromatis S., Matragos V., Liza R., Apostoleris K., Grammatikopoulos L., Yannis G. Passing Sight Distance Assessment through the Interaction of Road – Vehicle Parameters. *Proceedings of the 99th Annual meeting of the Transportation Research Board*, Washington DC, USA.
- 2020 Panagiotopoulou, A., Grammatikopoulos, L., Charou, E., Bratsolis, E., Madamopoulos, N. Petrogonas, J. Very Deep Super-Resolution of Remotely Sensed Images with Mean Square Error and Var-norm Estimators as Loss Functions. *arXiv preprint arXiv:2007.15417*[eess.IV].
- 2019 Grammatikopoulos L., Adam K., Petsa E., Karras G. Camera calibration using multiple unordered coplanar checkerboards. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XLII-2/W18*, pp. 59-66.
- 2019 Adam A., Grammatikopoulos L., Karras G., Protopapadakis E., Karantzalos K. A semantic 3D point cloud segmentation approach based on optimal view selection for 2D image feature extraction. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XLII-2/W17*, pp. 9-16.
- 2016 C. Stentoumis, I. Kalisperakis, L. Drikos, L. Grammatikopoulos. Visual and geometric recording of cargo vessels, *International Conference on Maritime Safety and Operations*. pp. 165–170.
- 2015 I. Kalisperakis, C. Stentoumis, L. Grammatikopoulos, M. E. Dasiou I. N. Psycharis. Precise 3D recording for finite element analysis, *Digital Heritage*, pp. 121-124.
- 2015 I. Kalisperakis, Ch. Stentoumis, L. Grammatikopoulos K. Karantzalos. Leaf area index estimation in vineyards from UAV hyperspectral data, 2D image mosaics and 3D canopy surface models, *ISPRS International Conference on Unmanned Aerial Vehicles in Geomatics, ISPRS UAV-g2015 (Volume XL-1/W4)*, pp.299-303.
- 2015 K. Karantzalos, P. Koutsourakis, I. Kalisperakis L. Grammatikopoulos. Model-based Building Detection from Low-Cost Optical Sensors Onboard Unmanned Aerial Vehicles, *ISPRS International Conference on Unmanned Aerial Vehicles in Geomatics, ISPRS UAV-g2015 (Volume XL-1/W4)*, pp.293-297.
- 2015 L. Grammatikopoulos, I. Kalisperakis, E. Petsa, C. Stentoumis, 2015. 3D city models completion by fusing lidar and image data. *Videometrics, Range Imaging, and Applications XIII .Proc. SPIE*, vol. 9528.

- 2015 C. Stentoumis, L. Grammatikopoulos, I. Kalisperakis, G. Karras, E. Petsa. Stereo matching based on census transformation of image gradients. *Videometrics, Range Imaging, and Applications XIII. Proc. SPIE*, vol. 9528.
- 2014 C. Stentoumis, L. Grammatikopoulos, I. Kalisperakis, G. Karras. On accurate dense stereo-matching using a local adaptive multi-cost approach. *ISPRS Journal of Photogrammetry and Remote Sensing*, 91, pp. 29-49.
- 2014 Petrogonas I., Grammatikopoulos L., Billiris G., Ramnalis D. Use of UAV for the Surveillance, Recording and Management of Areas That Have Been Naturally Destroyed by Fires, Floods and Earthquakes. *Panhellenic Conference on Natural Disaster Management*, Rhodes, October 24-26.
- 2014 Grammatikopoulos L., Petrogonas I., Billiris G. Photogrammetric Geospatial Products from Modern UAV Aerial Photography Platforms - Application in the mapping of Small Settlements. 4th Panhellenic Conference of Rural and Surveying Engineers, Thessaloniki, September 26-28.
- 2013 K. Adam, I. Kalisperakis, L. Grammatikopoulos, G. Karras, E. Petsa. Automatic camera calibration for cultural heritage applications using unstructured planar objects. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Volume XL-5/W2, 2013 – XXIV International CIPA Symposium, 2-6 September, Strasbourg, pp. 1-6.
- 2013 C. Stentoumis, G. Livanos, A. Doulamis, E. Protopapadakis, L. Grammatikopoulos, M. Zervakis. Precise 3D Reconstruction of Cultural Objects using Combined Multi-Component Adaptive Image Matching and Active Contours Segmentation. In proceeding of: *9th International Symposium on Visual Computing (ISVC 2013)*, July 29-31, Rethymnon, Crete, Greece.
- 2013 C. Stentoumis, L. Grammatikopoulos, I. Kalisperakis, E. Petsa, G. Karras. A local adaptive approach for dense stereomatching in architectural scene reconstruction. *5th International Workshop on 3D Virtual Reconstruction and Visualization of Complex Architectures (3D-ARCH 2013)*, February 25-26, Trento, Italy.
- 2012 C. Stentoumis, L. Grammatikopoulos, I. Kalisperakis, G. Karras. Implementing an adaptive approach for dense stereo-matching. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, vol. XXXVIII, Part 5, pp. 309-314.
- 2012 K. Makantasis, E. Protopapadakis, A. Doulamis, L. Grammatikopoulos, C. Stentoumis. Monocular camera fall detection system exploiting 3d measures:

a semi-supervised learning approach.
Computer Vision – ECCV 2012. Workshops and Demonstrations, Lecture Notes in Computer Science, Volume 7585, pp 81-90.

- 2011 I. Kalisperakis, L. Grammatikopoulos, E. Petsa, G. Karras.
A structured-light approach for the reconstruction of complex objects.
XXIII CIPA International Symposium, Prague, September 12-16.
- 2009 V. Douskos, L. Grammatikopoulos, I. Kalisperakis, G. Karras, E. Petsa,
FAUCCAL: An open source toolbox for fully automatic camera calibration.
International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Vol. XXXVII, Part B5, pp. 21-26.
- 2009 Prokos A., G. Karras, L. Grammatikopoulos, Design and evaluation of a photogrammetric 3D surface scanner. *XXII CIPA Symposium on Digital Documentation, Interpretation & Presentation of Cultural Heritage, October 11-15, 2009, Kyoto, Japan*
- 2008 Moullou D., D. Mavromati, V. Tsingas, C. Liapakis, L. Grammatikopoulos, S. Raikos, A. Sarris, E. Baltsavias, F. Remondino, J.-A. Beraldin, S. El-Hakim, L. Cournoyer, M. Picard, Recording, modeling, visualisation and GIS applications development for the Acropolis of Athens. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol. XXXVII, Part B5, pp. 1073-1076.*
- 2008 Remondino F., S. El-Hakim., E. Baltsavias, M. Picard, L. Grammatikopoulos, Image-based 3D modeling of the Erechteion, Acropolis of Athens. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol. XXXVII, Part B5, pp. 1083-1092.*
- 2008 Tsingas V., C. Liapakis, V. Xylia, D. Mavromati, D. Moulou, L. Grammatikopoulos, C. Stentoumis, 2008. 3D modeling of the Acropolis of Athens using balloon images and terrestrial laser scanning. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol. XXXVII, Part B5, pp. 1101-1106.*
- 2007 Karras G., Grammatikopoulos L., Kalisperakis I., Petsa E., Generation of orthoimages and perspective views with automatic visibility checking and texture blending. *Photogrammetric Engineering and Remote Sensing, 73(4), pp. 403-411*
- 2007 Grammatikopoulos L., Karras G., Petsa E., An automatic approach for camera calibration from vanishing points. *ISPRS Journal of Photogrammetry & Remote*

Sensing, 62, pp. 64-76.

- 2007 Grammatikopoulos L., Kalisperakis I., Karras G., Petsa E., Automatic multiview texture mapping of 3D surface projections. *3D Virtual Reconstruction and Visualization of Complex Architectures (3D Arch '07)*, July 12-13, ETH Zürich, Switzerland.
- 2007 Petsa E., Kalisperakis I., Grammatikopoulos L., Karras G., Pagounis V., Laser scanning and automatic multi-image texturing of surface projections. *XXI CIPA International Symposium*, Athens, 1-6 October, pp. 579-584.
- 2006 Kalisperakis I., Grammatikopoulos L., Petsa E., Karras G., An open-source educational software for basic photogrammetric tasks. *Proceedings of the FIG-ISPRES-ICA International Symposium on "Modern Technologies, Education & Professional Practice in Geodesy & Related Fields"*, Sofia, 09-10 November, pp. 581-586.
- 2006 Grammatikopoulos L., Karras G., Petsa E., Kalisperakis I., A unified approach for automatic camera calibration from vanishing points. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, Vol. XXXVI, Part 5 (in CD).
- 2006 Γραμματικόπουλος Λ., Καλησπεράκης Η., Καρράς Γ., Μαυρομάτη Δ., Πέτσα Ε., Σύγχρονες ψηφιακές τεχνικές τεκμηρίωσης στην επίγεια φωτογραμμετρία. *2^ο Συνέδριο Πανελληνίου Συλλόγου Αγρονόμων Τοπογράφων Μηχανικών*, Αθήνα, 9-10 Δεκεμβρίου.
- 2006 3D aspects of 2D epipolar geometry. I. Kalisperakis, G. Karras, L. Grammatikopoulos. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, Vol. XXXVI, Part 3, pp.255-259.
- 2005 Grammatikopoulos L., Kalisperakis I., Karras G., Petsa E., Data fusion from multiple sources for the production of orthographic and perspective views with automatic visibility checking. *Proc. XX CIPA International Symposium*, Torino, 27 September - 1 October, pp. 819-824.
- 2005 Grammatikopoulos L., Karras G., Petsa E., Automatic estimation of vehicle speed from uncalibrated video sequences. *Proceedings of the FIG-ISPRES-ICA International Symposium on "Modern Technologies, Education & Professional Practice in Geodesy & Related Fields"*, Sofia, 03-04 November, pp. 332-338.
- 2004 Grammatikopoulos L., Kalisperakis I., Karras G., Kokkinos T., Petsa E., On automatic orthoprojection and texture-mapping of 3D surface models.

International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences, 35(5), pp. 360-365.

- 2004 Grammatikopoulos L., Karras G., Petsa E., Camera calibration combining images with two vanishing points. *International Archives of the Photogrammetry, Remote Sensing & Spatial Information Sciences*, 35(5), pp. 99-104.
- 2004 Grammatikopoulos L., Kalisperakis I., Karras G., Kokkinos T., Petsa E., Automatic multi-image photo-texturing of 3D surface models obtained with laser scanning. *CIPA International Workshop on "Vision Techniques Applied to the Rehabilitation of City Centres"*, Lisbon, 25-27 October
- 2003 Grammatikopoulos L., Karras G., Petsa E., Camera calibration approaches using single images of man-made objects. *XIX CIPA International Symposium, Antalya, Turkey*, pp. 328-332.
- 2002 Grammatikopoulos L., Karras G., Petsa E., Geometric information from single uncalibrated images of roads. *International Archives of Photogrammetry & Remote Sensing*, 34(B5), pp. 21-26.

6 . Other Scientific Activities

2001–2002: Consultant of Digital Photogrammetry at the Department of Photogrammetry in the Cyprus Cadastre for the European program "Mapping and Project Valuation – Technical Assistance in Computerized Valuation".

2004–2015: Member of the Council of the Hellenic Society for Photogrammetry and Remote Sensing (HSPRS).

2005: Visit at the INRIA research institute (*Institut National de Recherche en Informatique et en Automatique*) and presentation of the progress of the PhD Thesis (15/3/2005 until 25/3/2005).

7 . Technical Expertise

- Programming languages: C / C++ / C#, Python, Visual Basic, Java, Matlab, HTML, VRML, XML, OpenGL)
- Databases: MySQL, Oracle, Access
- Experience in digital and analytical Photogrammetric Workstations (Inpho, LPS Leica Photogrammetry Suite, SocetSet, Intergraph-Z/I, Dvp, Adam).

- Experience in Remote Sensing and GIS applications (Erdas, Geomedia, Arc-GIS, Apollo Erdas, Manifold).
- Experience in open-source and commercial SFM software (ContextCapture, Metashape, pix4DMapper, Meshroom, VisualSFM etc)
- Experience in 3D Laser Scanning (Leica, Trimble, Surphaser, Faro) and in processing –modeling of range data (Geomagic, Polyworks, RapidForm, Cyclone, CloudWorx, Rhinoceros, Meshlab).
- Specialized (certified) user for Leica scanners (Leica Geosystems DSW).
- Web design (Director, Flash, Dreamweaver, Joomla, FrontPage)
- 3D graphics software (3D Studio Max, LightWave, Maya)
- CAD software (Autocad Civil, Microstation) and programming (ARX, MDL, ADS, VBA)