

Curriculum Vitae

November 2020

Elli PETSAS

Rural and Surveying Engineer, Ph.D.

Professor in Photogrammetry

*Department of Surveying and Geoinformatics Engineering
University of West Attica (UniWA), Athens, Greece*

2003 – 2006: Head of the Sector “Surveying, Photogrammetry & Cartography”

2006 – 2010: Head of the Department of Surveying Engineering of TEI-Athens

2013 – 2015: Head of the Department of Civil Engineering and Surveying & Geomatics Engineering of TEI-Athens

2010 – 2013: Head of the Sector “Surveying, Photogrammetry, Cartography” of TEI-A

2018 – today: Head of the Sector “Geodesy, Photogrammetry, Cartography” of UniWA

2001 – today: Director of the Laboratory of Photogrammetry (TEI-A, since 2018 UniWA)

2013–2016: Member of the Board of the Hellenic National Recognition and Information Center (Hellenic N.A.R.I.C.)

1. Studies

1981 Rural and Surveying Engineer, Department of Rural & Surveying Engineering, National Technical University of Athens, Greece

1996 Ph.D., Department of Rural & Surveying Engineering, National Technical University of Athens, Greece

Dissertation: “*Line Photogrammetry: Development, Investigation and Evaluation of Line Photogrammetric Algorithms for Digital Applications*”.

2. Teaching

- Graduate Courses: Teaches, or participates in teaching, of the courses “Photogrammetry I”, “Photogrammetry III”, “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 one course of the Postgraduate Program *Informatique, Synthèse d’Images et Conception Graphique – ISICG* (UniWA / University of Limoges, France)

3. Lecture Notes

Fundamentals and Basic Procedures in Photogrammetry, pp. 98 (in Greek) (2000).

4. Supervision of Diploma Theses

Supervision or co-supervision of 65 graduate and postgraduate Diploma Theses at the Department of Surveying and Geoinformatics Engineering of UniWA.

5. Supervision and Evaluation of Ph.D. Dissertations

- Supervisor 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 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 L. Grammatikopoulos “*Geometric Information from Single Uncalibrated Images in Photogrammetry and Computer Vision*” (Department of Rural & Surveying Engineering, National Technical University of Athens, 2007).
- Member of the evaluation committee of the Ph.D. Dissertation of I. Kalisperakis “*Epi-polar Geometry in Projective and Euclidean Space*” (Department of Rural & Surveying Engineering, National Technical University of Athens, 2010).
- Evaluator of Ph.D. Dissertations of the University of Limoges (Discipline/Spécialité: Informatique):
 - C.P. Yiakoumettis (2012): *Semantic Navigation of Large Scale Geo-referenced 3D Scenes and Virtual Worlds*
 - A. Tsolakidis (2014): *Systèmes d'Aide à l'Évaluation à Base de Visualisation Interactive de Graphes. Applications à l'Évaluation des Systèmes et des Institutions Éducatives*
 - T. Tsenoglou (2014): *Intelligent Pattern Recognition Techniques for Photo-realistic 3D Modeling of Urban Planning Objects*
 - N. Sideris (2019): *Spatial Decision Support in Urban Environments using Machine Learning, 3D Geo-visualization and Semantic Integration of Multi-Source Data*

6. Reviewer of International Scientific Journals

Photogrammetric Engineering and Remote Sensing

The Photogrammetric Record

IET Computer Vision

IEEE Geoscience and Remote Sensing Letters

Optics and Lasers in Engineering

MDPI Sensors

MDPI Remote Sensing

MDPI Symmetry

MDPI Electronic.

MDPI Applied Sciences

7. Research Projects

- 2001 *Photogrammetric Mapping of the Parodoi of the Ancient theatre of Sparta* (Financed by British Archaeological School of Athens)
- 2002-2003 *Investigation of Photogrammetric Methods for the Geometric Documentation of Damages due to Earthquake on the Eastern Part of the Ancient Castle of Aigosthena* (Financed by the Greek Ministry of Culture)
- 2005-2007 *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)

- 2005-2007 *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).
- 2008 *Generation of a Photogrammetric Structured-Light Scanner for the Reconstruction of Small Objects* (Financed by the Technological Educational Institute of Athens)
- 2012-2015 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)

8. Citations

47 of my scientific publications have 804 citations (November 2020)

Webpage Google Scholar: <https://scholar.google.gr/citations?user=jt00AxoAAAAJ&hl=el>

9. Publications

- 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
- 2017 Tsironis V., Tranou A., Vythoulkas A., Psalta A., Petsa E., Karras G., Automatic rectification of building façades. *ISPRS/CIPA 7th International Workshop on 3D Virtual Reconstruction and Visualization of Complex Architectures (3DArch)*, 1-3 March, Nafplion, Greece
- 2016 Kalisperakis I., Karras G., Petsa E., A Euclidean formulation of interior orientation constraints imposed by the fundamental matrix. *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. III-3, pp. 75-82
- 2016 Boussias-Alexakis E., Tsironis V., Petsa E., Karras G., Automatic adjustment of wide-base GOOGLE STREET VIEW panoramas. *The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. XLI-B1, pp. 639-645
- 2015 Stentoumis C., Grammatikopoulos L., Kalisperakis I., Karras G., Petsa E., Stereo matching based on Census transformation of image gradients. *Videometrics, Range Imaging, and Applications XIII*. Proc. SPIE, vol. 9528
- 2015 Grammatikopoulos L., Kalisperakis I., Petsa E., Stentoumis C., 3D city models completion by fusing lidar and image data. *Videometrics, Range Imaging, and Applications XIII*. Proc. SPIE, vol. 9528
- 2015 Grammatikopoulos L., Kalisperakis I., Petsa E., Automatic image orientation for accurate texture mapping of 3D city models. *International Conference ‘Science in Technology’ (SCinTE 2015)*, Athens, November 5-7
- 2013 Adam K., Kalisperakis I., Grammatikopoulos L., Karras G., Petsa E., 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, L. Grammatikopoulos, I. Kalisperakis, E. Petsa, G. Karras, A local adaptive approach mfor 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 A. Prokos, I. Kalisperakis, E. Petsa, G. Karras, Automatic calibration of stereo-

- cameras using ordinary chess-board patterns. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, vol. XXXVIII, Part 5, pp. 45-49.
- 2011 Kalisperakis I., Grammatikopoulos L., Petsa E., Karras G., Automatic A structured-light approach for the reconstruction of complex objects. *XXIII CIPA International Symposium, Prague, September 12-16*.
- 2010 Prokos A., Karras G., Petsa E., Automatic 3D surface reconstruction by combining stereovision with the slit-scanner approach. *International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. XXXVIII, Part 5, pp. 505-509.
- 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.
- 2008 V. Douskos, I. Kalisperakis, G. Karras, E. Petsa, Fully automatic camera calibration using regular planar patterns. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, Vol. XXXVII, Part B5, pp. 21-26.
- 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 multi-view 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-ISPRS-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).
- 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 Kalisperakis I., Karras G., Petsa E., Estimation of camera parameters from stereo pairs with no external control information. *Proc. XX CIPA International Symposium, Torino, 27 September - 1 October*, pp. 390-394.
- 2005 Grammatikopoulos L., Karras G., Petsa E., Automatic estimation of vehicle speed from uncalibrated video sequences. *Proceedings of the FIG-ISPRS-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 (πρακτικά σε CD).
- 2003 Kalisperakis I., Rova M., Petsa E., Karras G., On multi-image reconstruction from historic photographs. *XIX CIPA International Symposium*, Antalya, Turkey, pp. 216-219.
- 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.
- 2003 Mavromati D., Petsa E., Karras G., Experiences in photogrammetric archaeological recording. *XIX CIPA International Symposium*, Antalya, Turkey, pp. 666-669.
- 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.
- 2002 Mavromati D., Petsa E., Karras G., Theoretical and practical aspects of archaeological orthoimaging. *International Archives of Photogrammetry & Remote Sensing*, 34(B5), pp. 413-418.
- 2002 Petsa E., Kouroupis S., Karras G., Abgerissenes Wohnhaus in Athen. *Nahbereichsphotogrammetrie in der Praxis*, Th. Luhmann (Hrsg.), Herbert Wichmann Verlag, Heidelberg, pp. 3-6.
- 2002 Petsa E., Mavromati D., Karras G., Antikes Theater von Sparta. *Nahbereichsphotogrammetrie in der Praxis*, Th. Luhmann (Hrsg.), Herbert Wichmann Verlag, Heidelberg, pp. 55-58.
- 2002 Karras G., Petsa E., Theodoropoulou I., Altgriechische Türme. *Nahbereichsphotogrammetrie in der Praxis*, Th. Luhmann (Hrsg.), Herbert Wichmann Verlag, Heidelberg, pp. 59-62.
- 2001 Theodoropoulou I., Petsa E., G. Karras, Digital surface development of large cylindrical and conic structures with a single image technique. *The Photogrammetric Record*, 17(97), pp. 25-37.
- 2001 Karras G., Petsa E., Dimarogona A., Kouroupis S., Photo-textured rendering of developable surfaces in architectural photogrammetry. *Virtual and Augmented Architecture - VAA '01*, B. Fisher, K. Dawson-Howe & C. O'Sullivan (eds.), Springer Verlag, Berlin, pp. 147-158.
- 2001 Petsa E., 2001. Zur digitalen Projektion und Visualisierung von Türmen. *Photogrammetrie, Fernerkundung, Geoinformation*, Nr. 4, pp. 283-288.
- 2001 Petsa E., S. Kouroupis, G. Karras, Inserting the past in video sequences. *XVIII*

- CIPA International Symposium*, Potsdam, Germany, September 18-22, pp. 707-712.
- 2000 Petsa E., Karras G., Constrained line-photogrammetric 3D reconstruction from stereopairs. *International Archives of Photogrammetry & Remote Sensing*, 33(B5/2), pp. 604-610.
- 2000 Theodoropoulou I., Petsa E., G. Karras, Photogrammetric projection of curved surfaces in archaeological and architectural mapping. *Symposium on Archaeological and Architectural Photogrammetry*, The Photogrammetric Society, York, 30 November 2000.
- 1999 Karras G., Petsa E., Metric information from single uncalibrated images. *XVII CIPA International Symposium, Olinda, 3-6 Οκτωβρίου* (σε CD).
- 1999 Karras G., Mountrakis G., Patias P., Petsa E., Modeling distortion of super-wide-angle lenses for architectural and archaeological applications. *International Archives of Photogrammetry & Remote Sensing*, 32(5), pp. 570-573.
- 1997 Karras G.E., Patias P., Petsa E., Ketipis K., Raster projection and development of curved surfaces. *International Archives of Photogrammetry and Remote Sensing*, vol. 32(5C1B), pp. 179-185.
- 1996 Karras G.E., Patias P., Petsa E., Digital monoplottting and photo-unwrapping of developable surfaces in architectural photogrammetry. *International Archives of Photogrammetry and Remote Sensing*, 31(5), pp. 270-274.
- 1995 Patias P., Petsa E., Streilein A., *Digital Line Photogrammetry: Concepts, Formulations, Degeneracies, Simulations, Algorithms, Practical Examples*. ETH Zürich, Institut für Geodäsie und Photogrammetrie, Bericht Nr. 252, pp. 54.
- 1995 Petsa E., Patias P., Straight lines in photogrammetry: Basic algorithms (*Invited Paper*). *Integrated Sensor Orientation*, I. Colomina & J. Navarro (eds.), Wichmann Verlag, Heidelberg, pp. 185-194.
- 1994 Petsa E., Patias P., Formulation and assessment of straight-line based algorithms for digital photogrammetry. *International Archives of Photogrammetry and Remote Sensing*, 30(5), pp. 310-317.
- 1994 Petsa E., Patias P., Sensor attitude determination using linear features. *International Archives of Photogrammetry and Remote Sensing*, 30(1), pp. 62-70.
- 1994 Karras G.E., Petsa E., An algorithm for the localization of change in irregularly shaped surfaces. *Recent Advances in Experimental Mechanics*, J.F. Silva Gomes, F.B. Branco, F. Martins de Brito, J. Gil Saraiva, M. Lurdes Eusibio, J. Sousa Cirne, A. Correia da Cruz (eds.), Balkema Editions, Rotterdam, pp. 479-482.
- 1993 Petsa E., Karras G., Aperghis G., Zur Fassadenentzerrung aus Amateurbildern niedergerissener Altstadtviertel. *Zeitschrift für Vermessungswesen & Raumordnung*, 58(8), pp. 431-436.
- 1993 Karras G.E., Petsa E., DEM orientation and detection of deformation in close-range photogrammetry without control. *Photogrammetric Engineering & Remote Sensing*, 59(9), pp. 1419-24.
- 1993 Karras G.E., Patias P., Petsa E., Experiences with the rectification of non-metric digital images when ground control is not available. *Proceedings of the XV CIPA Symposium*, Βουκουρέστι (υπό έκδοση).
- 1992 Karras G.E., Petsa E., On detection of deformation in reconstructed body models. *International Symposium on 3D Scoliotic Deformities*. J. Dansereau (ed.), Éditions

- de l' École Polytechnique de Montréal & G. Fischer Verlag, Stuttgart, pp. 370-375.
- 1991 Papaioannou G., Tympanidou C., Petsa E., Moiré topography, a simple non-contact method for use in cosmetic dermatology. *2nd Congress of the European Academy of Dermatology & Venerology*, Athens, 10-13 October, Abstracts Volume, p. 395.
- 1991 Papaioannou G., Tympanidou C., Petsa E., Karras G., Towards a more rational assessment of fat accumulation and mobilization in young women. *2nd Congress of the European Academy of Dermatology & Venerology*, Athens, 10-13 October, Abstracts Volume, p. 395.
- 1982 Petsa E., Karras G.E., Badekas J., Assessing the accuracy of moiré topography measurements. *International Archives of Photogrammetry*, 24(5), pp. 367-276.
- 1982 Karras G.E., Petsa E., Tympanidis K., Lower limb measurements using moiré topography. *International Archives of Photogrammetry*, 24(5), pp. 261-271.