

CURRICULUM VITAE

MANOLIS LOURAKIS

PERSONAL INFORMATION

Name: Manolis I.A. Lourakis
Date of Birth: 27th January 1971
Place of Birth: Athens
Citizenship: Greek
Marital Status: Married, one child
Military Service: Fulfilled
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EDUCATION

- **PhD in Computer Science**

Department of Computer Science, University of Crete, Heraklion.
Duration: *January 1995 – December 1998.*

Dissertation: “Navigation of Autonomous Robotic Systems Based on the Analysis of Visual Motion”

Summary: The thesis is concerned with the perception of visual motion with application to the navigation of autonomous robotic systems. Four visual competences, namely independent motion detection, egomotion estimation, obstacle detection and time-to-contact estimation are studied and relevant algorithms are proposed and investigated experimentally.

- **MSc in Computer Science**

Department of Computer Science, University of Crete, Heraklion.
Duration: *September 1992 – January 1995.*

Main area of specialization was that of machine vision and robotics, secondary that of parallel and distributed systems.

- **BSc in Computer Science**

Department of Computer Science, University of Crete, Heraklion.
Duration: *September 1988 – June 1992.*

- **Foreign Languages**

Fluent in English, basic knowledge of French.

RESEARCH INTERESTS

Visual motion analysis, stereo vision and feature matching, camera calibration, structure and motion estimation, multiple view geometry, numerical optimization, object tracking, robotic vision, digital image & video processing, graphics, related applications.

WORK EXPERIENCE

Current Appointment

Institute of Computer Science, Foundation for Research & Technology – Hellas (ICS-FORTH, Heraklion)

Duration: August 2006 – Today

Principal researcher (tenured), doing research and development in the area of computational vision.

Involvement in R&D projects:

- **FP7 ICT–270138 DARWIN** - Dextrous Assembler Robot Working with Embodied Intelligence (Feb. 2011 – Jan. 2015).
- **Marie Curie IRSES FP7–247586 BIMAutoGen** – Automatic generation of BIM models (Jan. 2011 – Dec. 2015).
- **IST-FP7-IP-215821 GRASP** - Emergence of Cognitive Grasping through Introspection, Emulation and Surprise (Mar. 2008 – Jan. 2011).
- **IST-045388 INDIGO** - Interaction with Personality and Dialogue Enabled Robots (Feb. 2007 – Aug. 2009).

Previous Appointments

- **Institute of Computer Science, Foundation for Research & Technology – Hellas (ICS-FORTH, Heraklion)**

Duration: July 2003 – July 2006

Associated researcher doing research and development in the area of computational vision.

Involvement in R&D projects:

- **COOP-CT-2005-017405 RECOVER** - Photorealistic 3D Reconstruction of Perspective Paintings and Pictures (Oct. 2005 – Sep. 2007).
 - **COOP-CT-2004-512668 MultiSens** - Cameras as Multifunctional Sensors for Automated Processes (Nov. 2004 – Oct. 2006).
 - **FP6-507752 NoE MUSCLE** - Multimedia Understanding through Semantics, Computation and Learning Network of Excellence (Mar. 2004 – Feb. 2008).
 - **IST-2001-34545 LIFEPLUS** – Innovative revival of life in ancient frescos -paintings and creation of immersive narrative spaces, featuring real scenes with behaviored virtual fauna and flora (Apr. 2002 – Oct. 2004).
- **Institute of Computer Science, Foundation for Research & Technology – Hellas (ICS-FORTH, Heraklion)**

Duration: April 2002 – June 2003

Research associate working on camera tracking for augmented reality in the framework of the LIFEPLUS project.

- **Heraklion Chamber of Commerce and Industry Vocational Training Center**

Duration: October 2001 – March 2002.

Employed as a tutor and consultant in informatics and new technologies.

- **Hellenic Army, Research and Informatics Corps**
Duration: March 2000 – September 2001
 Eighteen-month compulsory military service with the Research & Informatics Corps of the Greek Army.
- **Institut National de Recherche en Informatique et en Automatique (INRIA/Sophia-Antipolis, France)**
Duration: February 1999 – February 2000.
 Post-doctoral researcher in the RobotVis group working on camera self-calibration and Euclidean reconstruction.
- **Institute of Computer Science, Foundation for Research & Technology – Hellas (ICS-FORTH, Heraklion)**
Duration: September 1993 – February 1999
 Graduate research assistant working on image processing and vision. Assigned duties included the development and implementation of algorithms, software development for the RWI B-21 mobile robot platform, Linux system support, compilation of research papers and proposals, supervision of undergraduate students and web development.
 Participation in R&D projects:
 - **TMR ERBFMRX-CT96-0049 VIRGO** - Vision-based Robot Navigation research network (1996-2000).
 - **Daimler-Benz ASR project** – Subcontract from Daimler-Benz AG in the framework of their Advanced Servicing Robot project (1997).
 - **Greek Secretariat for Research & Technology (GSRT) PENED'96 “Navigator”** - Robot Navigation in Unknown Environments Using Visual Information. (1996 -1997).
Duration: January 1991 – September 1993
 Graduate research assistant working on image database systems.
 Participation in R&D projects:
 - **AIM II EURIPACS** - European Integrated Picture Archiving and Communication System (1992-1993).

ADDITIONAL PROFESSIONAL ACTIVITIES (excluding teaching)

- **Technical reviewer**
 - Reviewer for the following journals: IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Image Processing, IEEE Transactions on Systems, Man and Cybernetics - Part B, IEEE Transactions on Robotics, Computer Vision and Image Understanding, Image and Vision Computing, SPIE Journal of Electronic Imaging, Journal of Virtual Reality and Broadcasting.
 - Regular reviewer for the major vision conferences: ICCV (International Conference on Computer Vision), CVPR (Computer Vision and Pattern Recognition), ECCV (European Conference on Computer Vision), ICPR, ICIP.
- **Tutorials chair in ECCV 2010**
- **Technological Educational Institute of Crete, Department of Mechanical Engineering (Heraklion)**
Duration: January 2000 – June 2000

Part time employment for developing simulation software related to the machine process of milling. Funding was supplied by the Greek Secretariat for Research & Technology in the context of a PENED'99 research project.

- **MITOS S.A., Science & Technology Park of Crete (Heraklion)**

Duration: June 1996 - February 1999

Part time employment for the development of Internet applications, web development, deployment & support of Linux web servers, LAN administration and maintenance of TCP/IP protocols (SMTP, DNS, NFS, POP, FTP, etc).

Participation in R&D projects:

- **RISI II TEmTeN** - Towards a European Medical & Telemworking Network (1997 - 1999).

- **European Computer Vision Labs Network (ECVNet)**

Duration: January 1993 – December 1998

Voluntary work for the development and maintenance of ECVNet's image databases and scientific publications web pages (<http://www.ics.forth.gr/forth/ics/cvrl/proj/ecvnet/>).

- **Department of Computer Science, University of Crete (Heraklion)**

Duration: September 1993 - June 1996

Voluntary work for the maintenance and software upgrade of the Department's SUN and PC/Linux workstations.

- **Institute of Electronic Structure and Laser, Foundation for Research & Technology – Hellas (IESL-FORTH, Heraklion)**

Duration: September 1995 – December 1995

Part time employment for the development of image capture and processing software for the chemical physics group. Funding was supplied by the Greek Secretariat for Research & Technology in the context of a PENED'95 research project.

- **Library Automation Group, Computer Center, University of Crete (Heraklion)**

Duration: Spring 1994 - Autumn 1996

Part time employment for the development of several PostScript filters (3of9 and UPC barcode labels generator, HTML to PostScript converter, etc).

TEACHING EXPERIENCE

- **University of Crete, Department of Computer Science (Heraklion)**
Visiting assistant professor during the 2002-2003 winter semester, teaching “CS-150: Programming”.
- **University of Crete, Applied Mathematics Department (Heraklion)**
Visiting assistant professor during the 2001-2002 winter semester, teaching “EM-091: Introduction to Programming”.
- **Technological Educational Institute of Crete, Department of Applied Informatics and Multimedia (Heraklion)**
Visiting fellow for teaching two courses during each of the two semesters of the 2001-2002 academic year.
Courses taught:
 - Computer Networks
 - Operating Systems
- **University of Crete, Department of Computer Science (Heraklion)**
Teaching assistant in graduate and undergraduate courses of a total duration of thirteen semesters. Duties involved lectures, complementary lessons, grading of exercises and assignments.
- **Heraklion Professional Training Foundation (IEK)**
Taught two courses during the 1998 winter semester:
 - Introduction to Informatics
 - Digital Image Processing – Animation

EXPERIENCE IN SOFTWARE/HARDWARE

Extensive experience with procedural and object oriented programming languages and the UNIX programming environment. More specifically:

Programming languages:	C, C++, SQL, Perl, Python, PostScript, Java, JavaScript, VBScript/ASP, VRML, HTML/CGI/PHP, Pascal, FORTRAN
Mathematical computing:	maple, matlab, mathematica
Operating systems:	Various UNIX flavors (Linux, Solaris, IRIX, OSF/1), MS Windows (98, NT, 2K & XP)
Parallel systems:	PARSYTEC transputer systems, Linda, PVM, MPI
Environments & tools:	X11, GCC & GNU tools, MSVC development tools, LaTeX, BLAS, LAPACK, MINPACK, SLATEC, TCP/IP applications & protocols (SMTP, SNMP, DNS, DHCP, NFS, FTP, HTTP, POP, IMAP, etc), Apache/IIS web servers, MS Office, SAMBA, PhotoShop, Premiere, 3dsMax

DISTINCTIONS - AWARDS

- Best paper award for “Vision-based Interpretation of Hand Gestures for Remote Control of a Computer Mouse”, ECCV 2006 Workshop on HCI.
- Awarded a EU-funded scholarship through the Virgo TMR network for postdoctoral study, 1999.
- Recipient of the “Vassilis Xanthopoulos” award sponsored by **FORTH** for excellent graduate studies performance, 1994
- Ranked second in graduating from the Computer Science Department of the University of Crete in 1992 with a GPA of 8,2/10.
- Awarded scholarships by the Greek State Scholarships Foundation (**IKY**) for excellent undergraduate studies performance during 1990, 1991 and 1992.
- Admission though a nationwide University entrance examination to the Computer Science Department of the University of Crete, ranking 6th in a total of 60 admitted students, 1988.

DEVELOPMENT OF OPEN SOURCE SOFTWARE

- **sba: Generic sparse bundle adjustment in C/C++**

Bundle adjustment is a large-scale non-linear optimization problem that is almost always solved as the last step of every feature-based structure and motion estimation algorithm. Solving bundle adjustment amounts to determining a set of motion and structure parameters that minimize the total reprojection error for all imaged 3D points in all cameras. Owing to the large number of the variables involved, general-purpose numerical optimization codes incur high computational and storage costs when applied to bundle adjustment. However, the lack of interaction among parameters for different 3D points and cameras results in the underlying normal equations having a sparse block structure, a property that can be exploited to gain tremendous computational benefits. SBA is a freely available C/C++ software package for generic sparse bundle adjustment that is based on a sparse variant of the Levenberg-Marquardt algorithm tailored to the zero pattern of the normal equations arising in bundle adjustment. SBA is the de facto standard software for bundle adjustment, being used by several researchers around the globe in disciplines such as computational vision, robotics, image-based graphics, photogrammetry, etc. More details and the source code can be found at <http://www.ics.forth.gr/~lourakis/sba>.

- **levmar: Levenberg-Marquardt non-linear least squares in C/C++**

The Levenberg-Marquardt algorithm is the most popular technique for solving the non-linear least squares problem, which often arises in data fitting problems. Levmar is a software package in C/C++ that includes single and double precision methods for solving several variants of the non-linear least squares problem, such as the employment of analytic or finite difference approximate Jacobians, the imposition of linear and/or box constraints, etc. Levmar is the only open source non-linear least squares package that is entirely written in C. It is being used in a wide spectrum of applications by a few thousand users, has been integrated in other scientific open source software (e.g. <http://scigraphica.sourceforge.net/>, <http://www.cellml.org/>) and includes a Matlab interface. Also, considerable interest for licensing levmar in order to be included in commercial applications has been expressed by several companies. More details and the source code can be found at <http://www.ics.forth.gr/~lourakis/levmar/>.

- **sparseLM: Sparse Levenberg-Marquardt non-linear least squares in C/C++**

sparseLM is a software library that concerns the solution of very large sparse non-linear least squares problems. This software automatically exploits the sparse structure of the problem's Jacobian without requiring the development of problem-specific sparse normal equation solvers. To achieve this, sparseLM integrates with a variety of high quality sparse codes such as CHOLMOD, CSPARSE, UMFPACK, SPOLES, MUMPS, MKL/Pardiso, SuperLU, TAUCS/METIS, LDL and HSL MA57/MA47/MA27, allowing the user to choose the one performing best in the context of the problem at hand. In this manner, sparseLM achieves the efficient solution of very large problems requiring only a minimal amount of special-purpose code to be developed for each. sparseLM is also usable from Matlab via a MEX interface. More details and the source code can be found at <http://www.ics.forth.gr/~lourakis/sparseLM/>.

- **homest: Robust, Non-linear Homography Estimation**

A homography is a general plane to plane projective transformation that has eight degrees of freedom and is represented by a non-singular homogeneous 3x3 matrix. homest is a software library for non-linear, robust homography estimation from matched image point features. Using normalized point coordinates to improve conditioning and Least Median of Squares (LMedS) linear fitting to detect outliers, a linear homography estimate is obtained first. Then, this estimate is refined non-linearly by minimizing (at the user's choice), the non-symmetric homographic transfer error in one image, the symmetric homographic transfer error between the images, the Sampson error or the reprojection error. Apart from fully projective homographies, homest also supports the estimation of affine (i.e., six DOF) homographies. More details and the source code can be found at <http://www.ics.forth.gr/~lourakis/homest/>.

- **Other open source software**

Authorship or participation in the development of various programs that are available on the Internet free of charge: a2ps, xvmines, genscript, moreH, KLT corner tracker, etc.

PUBLICATIONS

The papers listed below are available in electronic form from <http://www.ics.forth.gr/~lourakis/publ/>.

A. Theses (available from <http://dlib.lib.uoc.gr>)

A.1 PhD Thesis

“Navigation of Autonomous Robotic Systems Based on the Analysis of Visual Motion”, Department of Computer Science, University of Crete, Heraklion, December 1998.

Supervisor: Prof. S.C. Orphanoudakis.

A.2 MSc Thesis

“An Alternative Approach For Studying Space Perception: Use of Ordinal Instead of Metric Depth”, Department of Computer Science, University of Crete, Heraklion, January 1995.

Supervisor: Prof. S.C. Orphanoudakis.

AA. Under Review

- AA.1 M.I.A. Lourakis, “*sparseLM: A Software Package for Large, Arbitrarily Sparse Nonlinear Least Squares*”, submitted to the **ACM TOMS** Journal, 2011.

B. Book Chapters

- B.1 A.A. Argyros, G. Bárfai, C. Eitzinger, Z. Kemény, B.Cs.Csáji, L. Kék, M. Lourakis, W. Reisner, W. Sandrisser, T. Sarmis, G. Umgeher and Z. Viharos, “*Smart Sensor Based Vision System for Automated Processes*” in “**Emerging Technologies, Robotics and Control Systems**”, vol. 2, International Society for Advanced Research, **ISBN 978-88-901928-9-5**, June 2007.
- B.2 A.A. Argyros and M.I.A. Lourakis, “*Tracking Skin-colored Objects in Real-time*”, in “**Cutting Edge Robotics**”, V. Kordic, A. Lazinica and M. Merdan (Eds.), pp. 77-90, Pro Literatur Verlag/ARS International, **ISBN 3-86611-038-3**, 2005.

C. In Peer-Reviewed International Journals

- C.1 I. Brilakis, M. Lourakis, R. Sacks, S. Savarese, S. Christodoulou, J. Teizer, and A. Makhmalbaf, “*Toward Automated Generation of Parametric BIMs Based on Hybrid Video And Laser Scanning Data*”, **Advanced Engineering Informatics**, 24(4): 456-465, Elsevier Science Publishers, November 2010.
- C.2 D. Michel, A.A. Argyros and M.I.A. Lourakis, “*Horizon Matching for Localizing Unordered Panoramic Images*”, **Computer Vision and Image Understanding**, 114(2): 274-285, Elsevier Science Publishers, Special Issue on Omnidirectional Vision, Camera Networks, and Non-conventional Cameras, February 2010.
- C.3 M.I.A. Lourakis and A.A. Argyros, “*SBA: A Software Package For Generic Sparse Bundle Adjustment*”, **ACM Trans. on Mathematical Software (TOMS) Journal**, 36(1):1–30, March 2009.

- C.4 M.I.A. Lourakis and A.A. Argyros, "Refining Single View Calibration With the Aid of Metric Scene Properties", **Journal of the WSCG Conference**, Vol. 15, No 1-3, ISSN 1213-6972, pp. 129-134, January 2007.
- C.5 A.A. Argyros, G. Bártfai, C. Eitzinger, Z. Kemény, B.Cs.Csáji, L. Kék, M. Lourakis, W. Reisner, W. Sandrisser, T. Sarmis, G. Umgeher, Z. Viharos, "Smart Sensor Based Vision System for Automated Processes", **International Journal of Factory Automation, Robotics and Soft Computing**, Thomson Scientific Journal, vol. 3, pp. 118-123, July 2007.
- C.6 M.I.A. Lourakis and A.A. Argyros, "Efficient, Causal Camera Tracking in Unprepared Environments", **Computer Vision and Image Understanding Journal (CVIU)**, vol. 99, pp. 259-290, August 2005.
- C.7 A.A. Argyros and M.I.A. Lourakis, "3D Tracking of Skin-Colored Regions by a Moving Stereoscopic Observer", **Optical Society of America Applied Optics, Information Processing Journal**, Special issue on "Methods for automatic target recognition using Electro-Optical sensors", Vol. 43, No. 2, pp. 367-378, January 2004.
- C.8 M.I.A. Lourakis, S.V. Tzurbakis, A.A. Argyros and S.C. Orphanoudakis, "Feature Transfer and Matching in Disparate Stereo Views through the Use of Plane Homographies", **IEEE Transactions on Pattern Recognition and Machine Intelligence (T-PAMI)**, Vol. 25, No. 2, pp. 271-276, February 2003.
- C.9 M.I.A. Lourakis, S.T. Halkidis and S.C. Orphanoudakis, "Matching Disparate Views of Planar Surfaces Using Projective Invariants", **Image and Vision Computing Journal**, Vol. 18, No. 6, pp. 673-683, June 2000.

D. In Peer-Reviewed International Conferences

- D.1 M.I.A. Lourakis, "Sparse Non-Linear Least Squares Optimization for Geometric Vision", in Proceedings of the 11th **European Conference on Computer Vision (ECCV'10)**, part II, pp. 43-56, Heraklion, Greece, September 5-11, 2010.
- D.2 M.I.A. Lourakis, "Plane Metric Rectification from a Single View of Multiple Coplanar Circles", in Proceedings of the **IEEE International Conference on Image Processing (ICIP 2009)**, pp. 509-512, Cairo, Egypt, Nov. 7-10, 2009.
- D.3 I. Brilakis, M. Lourakis, R. Sacks, S. Savarese, S. Christodoulou, J. Teizer and A. Makhmalbaf "Automated Generation of Parametric BIMs based on Hybrid Video and Laser Scanning Data", Proceedings of the **EG-ICE Workshop on Intelligent Computing in Engineering**, pp. 59-66, Berlin, Germany, Jul. 15-17 2009.
- D.4 M.I.A. Lourakis, "A System for Geometrically Constrained Single View Reconstruction", in Proceedings of the **6th International Conference on Computer Vision Systems, (ICVS 2008)**, pp. 193-205, Santorini, Greece, May 13-15, 2008.
- D.5 H. Baltzakis, A.A. Argyros, M.I.A. Lourakis, P. Trahanias, "Tracking of Human Hands and Faces Through Probabilistic Fusion of Multiple Visual Cues", in Proceedings of the **6th International Conference on**

- Computer Vision Systems, (ICVS 2008)**, pp. 33-42, Santorini, Greece, May 13-15, 2008.
- D.6 D. Michel, A.A. Argyros, M.I.A. Lourakis, "*Localizing Unordered Panoramic Images Using the Levenshtein Distance*", Proc. of 7th workshop on **Omnidirectional Vision, Camera Networks and Non-classical Cameras (OMNIVIS'2007)**, in conjunction with **ICCV'07**, Rio de Janeiro, Brazil, Oct. 20, 2007.
- D.7 M. Lourakis, F. Spadoni and P. Alcamo, "*Enriching Pictorial Cultural Content with 3D Models*", **1st VARIAZIONI Workshop on Technologies for Content Enrichment in the Web2.0 Era**, in conjunction with **AXMEDIS'07** (3rd International Conference on Automated Production of Cross Media Content for Multi-Channel Distribution), pp. 102-106, Barcelona, Spain, Nov. 28-30, 2007.
- D.8 M.I.A. Lourakis and A.A. Argyros, "*Enforcing Scene Constraints in Single View Reconstruction*", in proceedings of the **EuroGraphics 2007** conference, Prague, Czech Republic, Sep 3-7, 2007.
- D.9 M. Lourakis, P. Alongi, D. Delouis, F. Lippi and F. Spadoni, "*Photorealistic 3D Reconstruction of Perspective Paintings and Pictures*", in proceedings of **Electronic Visualisation and the Arts (EVA'07)**, London, UK, July 9-13, 2007.
- D.10 M.I.A. Lourakis and A.A. Argyros, "*Accurate Constraint-Based Modeling From a Single Perspective View*", in proceedings of the **Computer Graphics International Conference, (CGI'07)**, Petropolis, RJ, Brazil, May 30 – Jun 2, 2007.
- D.11 M.I.A. Lourakis and A.A. Argyros, "*Refining Single View Calibration with the Aid of Metric Scene Properties*", in proceedings of the 15-th **International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG'2007)**, Jan 29 - Feb 1, 2007.
- D.12 T. Sarmis, A.A. Argyros, M.I.A. Lourakis, K. Hatzopoulos, "*Robust and Efficient Event Detection for the Monitoring of Automated Processes*", invited contribution to the special session "Towards Robust Visual Surveillance Techniques and Systems" of the **Visual Information Engineering (VIE'2006) conference**, Bangalore, India, Sep 26-28, 2006.
- D.13 M.I.A. Lourakis and A.A. Argyros, "*Chaining Planar Homographies for Fast and Reliable 3D Plane Tracking*", Proceedings of the **2006 IAPR International Conference on Pattern Recognition, ICPR'06**, vol.1, pp. 582-586, Hong-Kong, China, August 2006.
- D.14 A.A. Argyros and M.I.A. Lourakis, "*Binocular Hand Tracking and Reconstruction Based on 2D Shape Matching*", in Proceedings of the **2006 IAPR International Conference on Pattern Recognition, ICPR'06**, vol. 1, pp. 207-210, Hong-Kong, China, August 2006.
- D.15 M.I.A. Lourakis and A.A. Argyros, "*Exploiting the Sparseness of Bundle Adjustment for Efficient 3D Reconstruction*", to appear in Proceedings of the **Computation Intensive Methods for Computer Vision** workshop, held in conjunction with the **2006 European Conference on Computer Vision, ECCV'06**, Graz, Austria, May 2006.

- D.16 A.A. Argyros and M.I.A. Lourakis, “*Vision-based Interpretation of Hand Gestures for Remote Control of a Computer Mouse*”, Proceedings of the **Human Computer Interaction** workshop, held in conjunction with the **2006 European Conference on Computer Vision, ECCV’06**, pp. 40-51, Graz, Austria, May 2006.
- D.17 M.I.A. Lourakis and A.A. Argyros, “*Is Levenberg-Marquardt the Most Efficient Optimization Algorithm for Implementing Bundle Adjustment?*”, Proceedings of the **IEEE International Conference on Computer Vision, ICCV’05**, vol. 2, pp.1526–1531, Beijing, China, Oct. 2005.
- D.18 M.I.A. Lourakis and A.A. Argyros, “*Fast Trifocal Tensor Estimation Using Virtual Parallax*”, in Proceedings of the **IEEE International Conference on Image Processing, ICIP 2005**, Vol. II, pp. 93-96, Genoa, Italy, Sep. 2005.
- D.19 A.A. Argyros and M.I.A. Lourakis, “*Tracking Multiple Colored Blobs With a Moving Camera*”, in video proceedings of the **IEEE Computer Vision and Pattern Recognition Conference, CVPR’05**, vol. 2, no. 2, p. 1178, San Diego, USA, June 2005.
- D.20 M.I.A. Lourakis and A.A. Argyros, “*Camera Matchmoving in Unprepared, Unknown Environments*”, in video proceedings of the **IEEE Computer Vision and Pattern Recognition Conference, CVPR’05**, vol. 2, no. 2, p. 1190, San Diego, USA, June 2005.
- D.21 M.I.A. Lourakis and A.A. Argyros, K. Marias, “*A Graph-Based Approach to Corner Matching Using Mutual Information as a Local Similarity Measure*”, **2004 IAPR International Conference on Pattern Recognition, ICPR’04**, vol. 2, pp. 827-830, Cambridge, UK, Aug. 2004.
- D.22 M.I.A. Lourakis and A.A. Argyros, “*Vision based Camera Motion Recovery for Augmented Reality*”, **2004 IEEE Computer Graphics International Conference, CGI’04**, pp. 569-576, Hersonisos, Crete, Greece, June 2004.
- D.23 A.A. Argyros and M.I.A. Lourakis, “*Real time Tracking of Multiple Skin-Colored Objects with a Possibly Moving Camera*”, **2004 European Conference on Computer Vision, ECCV’04**, Springer-Verlag, vol. 3, pp. 368-379, Prague, Czech Republic, May 2004.
- D.24 M.I.A. Lourakis, A.A. Argyros and S.C. Orphanoudakis, “*Detecting Planes In An Uncalibrated Image Pair*”, **2002 British Machine Vision Conference, BMVC’02**, Cardiff, UK, vol. 2 pp. 587-596, September 2002.
- D.25 M.I.A. Lourakis, S.V. Tzurbakis, A.A. Argyros and S.C. Orphanoudakis, “*Using Geometric Constraints for Matching Disparate Stereo Views of 3D Scenes Containing Planes*”, **2000 IAPR International Conference on Pattern Recognition, ICPR’00**, Barcelona, Spain, vol. 1 pp. 419-422, September 2000.
- D.26 M.I.A. Lourakis, “*Egomotion Estimation Using Quadruples of Collinear Image Points*”, **2000 European Conference on Computer Vision, ECCV’00**, Dublin, Ireland, vol. 2 pp. 834-848, June 2000.
- D.27 T. Papadopoulo and M.I.A. Lourakis, “*Estimating the Jacobian of the Singular Value Decomposition: Theory and Applications*”, **2000 European Conference on Computer Vision, ECCV’00**, Dublin, Ireland, vol. 1 pp. 554-570, June 2000.

- D.28 M.I.A. Lourakis, “Using Constraint Lines for Estimating Egomotion”, **2000 Asian Conference on Computer Vision, ACCV'00**, Taipei, Taiwan, vol.2 pp. 971-976, January 2000.
- D.29 M.I.A. Lourakis and R. Deriche, “Camera Self-Calibration Using the Singular Value Decomposition of the Fundamental Matrix”, **2000 Asian Conference on Computer Vision, ACCV'00**, Taipei, Taiwan, vol. 1 pp. 403-408, January 2000.
- D.30 M.I.A. Lourakis and S.C. Orphanoudakis, “Using Planar Parallax to Estimate the Time-to-Contact”, **1999 IEEE Computer Vision and Pattern Recognition Conference, CVPR'99**, Fort Collins, Colorado, USA, vol.2 pp. 640-645, June 1999.
- D.31 M.I.A. Lourakis and S.C. Orphanoudakis, “Egomotion Estimation Using FOE Constraint Lines”, **Workshop on Computer Vision and Mobile Robotics, organized by the EU funded TMR Networks VIRGO - SMART - MobiNet**, Santorini, Greece, pp. 107-114, Sep. 1998.
- D.32 M.I.A. Lourakis, S.T. Halkidis and S.C. Orphanoudakis, “Robust Matching of Coplanar Point and Line Features”, **Workshop on Computer Vision and Mobile Robotics, organized by the EU funded TMR Networks VIRGO - SMART - MobiNet**, Santorini, Greece, pp. 21-28, Sep. 1998.
- D.33 M.I.A. Lourakis and S.C. Orphanoudakis, “Using Planar Parallax to Estimate the Time-to-Contact”, **Workshop on Computer Vision and Mobile Robotics, organized by the EU funded TMR Networks VIRGO - SMART - MobiNet**, Santorini, Greece, pp. 123-130, Sep. 1998.
- D.34 M.I.A. Lourakis, S.T. Halkidis and S.C. Orphanoudakis, “Matching Disparate Views of Planar Surfaces Using Projective Invariants”, **1998 British Machine Vision Conference, BMVC'98**, Southampton, UK, vol. 1, pp. 94-104, Sep. 1998.
- D.35 M.I.A. Lourakis, A.A. Argyros and S.C. Orphanoudakis, “Independent 3D Motion Detection Using Residual Parallax Normal Flow Fields”, **1998 IEEE International Conference on Computer Vision, ICCV'98**, Mumbai, India, pp. 1012-1017, Jan. 1998.
- D.36 M.I.A. Lourakis and S.C. Orphanoudakis, “Visual Detection of Obstacles Assuming a Locally Planar Ground”, **1998 Asian Conference on Computer Vision, ACCV'98**, Hong Kong, vol. 2, pp. 527-534, Jan.1998.
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