

Dr. Elias Xidias

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University of the Aegean

Department of Product and Systems Design Engineering
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PERSONAL INFORMATION

- *Date of Birth*: March 29, 1978 at Thessaloniki, Greece.
- *Marital Status*: Married.

AREAS OF SPECIALIZATION AND RESEARCH

- *Motion Planning*: of autonomous moving units and crowds. Research and development of methods for optimal motion design in environments cluttered with both moving and static obstacles utilizing evolutionary optimization methods and geometric modeling tools.
- *Robotics logistics and autonomous systems*: Emphasis on robot motion design, adaptation and learning, intelligent navigation, routing and scheduling.
- *Micro Assembly*: Research and development of mathematical models for the construction of Artificial Potential fields for handling micro-parts.
- *Informatics: Programming Languages*: C/C++ (MSVC++), Fortran 77, Digital Fortran 90, Matlab, ROS (Beginner). *Graphics Libraries*: OpenGL. *Data Structures*: Binary Trees. Sorting algorithms Quick-sort, Heap-sort. *Design applications*: AutoCAD, Pro/Engineer Wildfire.

EDUCATION

2009- Researcher- Adjunct lecturer

Today Department of Product and Systems Design Engineering, University of the Aegean, Syros, Greece.

2003-2009 *Ph.D. in Mechanical & Aeronautical Engineering*

Department of Mechanical & Aeronautical Engineering, University of Patras, Greece.

Dissertation: “Robot Motion Planning in Environments Cluttered with Obstacles”.

Supervisor: Prof. Nikos Aspragathos

1997-2003 *Mathematics Degree*

Department of Mathematics, University of Patras, Greece.

PROFESSIONAL EXPERIENCE

October 2003-May 2009: University of Patras

Department: Department of Mechanical & Aeronautical Engineering

▪ October 2003 – May 2009:

- Tutor of laboratory courses “Electrical Circuits and Machines”, with main instructor Prof. Nikos Aspragathos
- Tutor of exercises for the course “Robotics”, with main instructor Prof. Nikos Aspragathos

October 2009 – Today: University of the Aegean

Department: Department of Product and Systems Design Engineering

▪ October 2009 – Today: Adjunct Lecturer

Undergraduate Courses:

- «Computer-Aided Design», Academic years 2009-12, Fall Semester.
- «Introduction to Computer-Aided Design», Academic years 2009-11, Fall Semester.

- «Robotics», Academic years 2009-12, Fall Semester.
- «Computer Graphics», Academic years 2009-12, Spring Semester.
- «Programming Methodologies & Techniques I», Academic years 2009-12, Spring Semester.
- «Motion Planning Methods», Academic year 2010-12, Fall Semester.
- «Informatics», Academic year 2011-2012, Fall Semester.

ACADEMIC RESEARCH

- *Basic/academic research in the fields:* Motion Design, Micro-Assembly, Operational Research.

University of Patras, Department of Mechanical & Aeronautical Engineering

- **2003-2006:** Main researcher in the research project “Optimal robot motion design based on Computational Geometry”, basic research project: “K. Karatheodoris”.
- **2006-2008:** Main researcher in the research project: I*PROMS NoE.
- **2005-2008:** Researcher in the research project: 4M (Multi Material Micro Manufacture).
- **2003-2009:** Ph.D. dissertation.
- **2003-Today:** Member of the *Robotics Research Group* (Prof. Nikos Aspragathos).

University of the Aegean, Department of Product & Systems Design Engineering

- **2009-2012:** SMILIES: Small Mediterranean Insular Light Industries Enhancement and Support 1G-MED08-454 (Researcher).

SCIENTIFIC & PROFESSIONAL ACTIVITIES

Referee for the international Scientific Journals

- Robotica
- Journal of Industrial Robots
- International Journal of Vehicle Autonomous Systems
- Journal of Assembly Automation
- International Journal of Robotics and Automation
- Mechatronics

Referee for the International Scientific Conferences

- ICIRA 2011: 4th International Conference on Intelligent Robotics and Applications, Aachen, Germany, December 6-9, 2011.
- SYROCO 2009: 9th International IFAC Symposium on Robot Control, Nagaragawa Convention Center, Gifu, Japan, September 9-12, 2009.
- ASME/IFTtoMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2009).
- 4th I*PROMS Virtual International Conference on Intelligent Production Machines and Systems, 2008.
- 3rd I*PROMS Virtual International Conference on Intelligent Production Machines and Systems, 2007.
- ECC 07: 2007 European Control Conference, Kos, Greece, July 2-5, 2007.
- 2nd I*PROMS Virtual International Conference on Intelligent Production Machines and Systems, 2006.
- 4M2005 Conference on Multi-Material Micro Manufacture.

MEMBER OF INTERNATIONAL CONFERENCE PROGRAMM COMMITTEES

- IADIS International Conference Applied Computing 2009 (<http://www.computing-conf.org/>).
- IADIS International Conference Applied Computing 2010 (<http://www.computing-conf.org/>).

- IADIS International Conference Applied Computing 2011 (<http://www.computing-conf.org/>).
- ICIRA 2011: 4th International Conference on Intelligent Robotics and Applications 2011 (<http://www.icira2011.org/>).

PUBLICATIONS

International Scientific Journals

2006

- [A1] Elias K. Xidias, Philip N. Azariadis, Nikos A. Aspragathos. "Energy-Minimizing Motion Design for Non-holonomic Robots Amidst Moving Obstacles". *Journal of Computer Aided Design and Applications*, Vol. 3, Nos.1-4, pp. 165-174, 2006.

2007

- [A2] Elias K. Xidias, Philip N. Azariadis, Nikos A. Aspragathos. "Two Dimensional Motion-Planning for Non-holonomic Robots Using the Bump-Surfaces Concept". *Computing*, Vol. 79, Issue 2, pp 109 – 118, 2007.

2008

- [A3] Elias K. Xidias and Nikos A. Aspragathos. "Motion Planning for Multiple Nonholonomic Robots: a geometric approach". *Robotica*, Vol.26, Issue 4, pp.525-536, 2008.
- [A4] Elias K. Xidias, Philip N. Azariadis, Nikos A. Aspragathos. "Path Planning of Holonomic and Non-Holonomic Robots Using Bump-Surfaces". *Journal of Computer Aided Design and Applications*, Vol. 5, Nos.1-4, pp. 497-507, 2008.

2009

- [A5] Elias K. Xidias, Andreas C. Nearchou and Nikos A. Aspragathos. "Vehicle scheduling in 2D shop floor environments". *Journal of Industrial Robots*, 36 (2), pp. 176-183, 2009.

2010

- [A6] Elias K. Xidias, Paraskevi Th. Zacharia and Nikos A. Aspragathos. "Time-Optimal task scheduling for articulated manipulators in environments cluttered with obstacles". *Robotica*, Issue 3, Vol. 28, pp. 427-440, 2010.
- [A7] Elias K. Xidias, Paraskevi Th. Zacharia and Nikos A. Aspragathos. "Time optimal task scheduling for two-robotic manipulators operating in 3D environments". *Proceedings of the Institution of Mechanical Engineers. Part I: Journal of Systems and Control Engineering* 224 (7), pp. 845-855, 2010.

2011

- [A8] Elias K. Xidias, Philip N. Azariadis. "Mission design for a group of autonomous guided vehicles". *Robotics and Autonomous Systems* 59 (1), pp. 34-43, 2011.

2012

- [A9] Elias K. Xidias, Andreas C. Nearchou and Nikos A. Aspragathos. "Integrating path planning, routing and scheduling for logistics operations in manufacturing facilities". Accepted for publication in *Cybernetics & Systems: An International Journal*.
- [A10] Paraskevi Th. Zacharia, Elias K. Xidias and Nikos A. Aspragathos. "Multi-goal motion planning for industrial manipulators operating in three-dimensional environments". To be Submitted.
- [A11] Elias K. Xidias and Nikos A. Aspragathos. "Motion planning for redundant manipulators operating in complicated three-dimensional environments". To be Submitted.

Chapters in Books

- [B1] Xidias E., Aspragathos N., Azariadis P., Mission planning of mobile robots and manipulators for service applications, *Service Robots and Robotics: Design and Application*, IGI Global, to appear.

Conference Proceedings with Referees

2004

- [C1] Elias Xidias and Nikos Aspragathos. "Bump-Hypersurfaces for optimal motion planning in 3D spaces". In the *Proceedings of International Workshop on Robotics in Alpe-Adria-Danube Region Brno*, June 2-5, 2004.

2005

- [C2] Elias Xidias and Nikos Aspragathos. Dynamic Motion Planning for Mobile Robots Using the Bump-Surface Concept. In Proceeding of the 2nd European Conference on Mobile Robots, 7-10 September, Ancona, Italy, 2005.

2006

- [C3] Elias K. Xidias, Nikos A. Aspragathos. "Path Planning in Weighted Regions Using the Bump-Surface Concept". In the Proceedings of the 2006 I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems.
- [C4] Elias K. Xidias, Nikos A. Aspragathos. "Motion Planning Amidst Moving Obstacles Using the Bump-HyperSurface Concept". In Proceedings of the SYROCO 2006, 8th International IFAC Symposium on Robot Control, September 6 - 8, 2006
- [C5] Elias K. Xidias, Nikos A. Aspragathos. "Force fields with one stable equilibrium for micropart 2D manipulation". In Proceeding of the 4M2006 Conference on Multi-Material Micro Manufacture, 20 – 22 September 2006, Grenoble, France.
- [C6] Elias K. Xidias, Nikos A. Aspragathos. "A stable equilibrium for micropart 2D manipulation using a combination of squeeze fields". In Proceedings of the IWFM 2006, 5th International Workshop on Microfactories, October 25-27, 2006.

2007

- [C7] Elias K. Xidias, Andreas C. Nearchou and Nikos A. Aspragathos. "Single Vehicle Routing in Reconfigurable Manufacturing Environments Using the Bump-Surface Concept". In Proceedings 2007 I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems.
- [C8] Elias K. Xidias and Nikos A. Aspragathos. "Motion Planning Control for Multiple Car-Like Robots Using the Bump-Surface Concept". In Proceedings of the 2007 European Control Conference will be held in Kos, Greece on July 2-5, 2007.
- [C9] Elias K. Xidias, Paraskevi Th. Zacharia and Nikos A. Aspragathos. "Task scheduling with obstacle avoidance for industrial manipulators operating in 3D environments". In Proceedings 2007 I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems, pp.395-400, 2-13 July 2007.
- [C10] Elias K. Xidias, Paraskevi Th. Zacharia and Nikos A. Aspragathos. "Optimal task scheduling for Coordinate Measuring Machines". 8th International Conference and Exhibition on Laser Metrology, Machine Tool, CMM & Robotic Performance, 25-28 June 2007.

2008

- [C11] Elias K. Xidias, Andreas C. Nearchou and Nikos A. Aspragathos. "Simultaneously motion planning and scheduling for two autonomous vehicles". In Proceedings 2008 I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems.

2009

- [C12] E.K. Xidias, P.Th. Zacharia, N.A. Aspragathos. "Optimal task scheduling for a two-robot workcell". In Proceedings 2009 I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems.
- [C13] Xidias E., Azariadis P., Aspragathos N.. "Time Optimum Motion Planning for a Set of Car-Like Robots". Accepted for publication in proceedings of the 9th International IFAC Symposium on Robot Control (SYROCO), Gifu, Japan, Sep. 9-12, 2009.

2010

- [C14] Xidias E., Azariadis P., Motion design in 2D environments that contain obstacles moving in unknown trajectories, 2nd PanHellenic Robotics Conference, 9-10 Dec. 2010, Rion, Greece.
- [C15] Xidias E., Nearchou A., Time optimal scheduling in 2D environments, 2nd PanHellenic Robotics Conference, 9-10 Dec. 2010, Rion, Greece.

2011

- [C16] Elias Xidias, Nikos A. Aspragathos and Philip Azariadis. Motion Design for Service Robots. Intelligent Robotics and Applications, 4th International Conference, ICIRA 2011, Aachen, Germany, December 6-8, 2011, Proceedings, Part I, pp. 630-638.

CITATIONS

- **Sixteen (16)** citations found up to May 2012: 2 in [A2], 1 in [A4], 1 in [A7], 4 in [A3], 8 in [A8].