Curriculum Vitae

Paraskevi Th. Zacharia

Assistant Professor

Job address: Department of Industrial Design & Production Engineering, University of West Attica 12241 Campus II Ancient Olive Grove, Egaleo, Greece.

PERSONAL DATA

Surname	Zacharia
Name	Paraskevi
Nationality	Greek
Place of birth	Patras, Achaia, Greece
Date birth	12/2/1980
Marital Status	Married with two children
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EDUCATION

2011-2016	**Ph.D in Economics and Business** University of Patras, School of Economics and Business, Department of Business Administration Dissertation: "Multi-objective assembly line balancing using genetic algorithms", Supervisor: Prof. Andreas Nearchou
1997-2008	**Ph.D in Engineering** University of Patras, School of Engineering, Department of Mechanical & Aeronautics Engineering

	Dissertation: “Robot control for handling fabrics based on computational intelligence methods and visual servoing”, Supervisor: Prof. Nikos Aspragathos
1997-2002	**Diploma in Mechanical & Aeronautics Engineering** University of Patras, School of Engineering, Department of Mechanical & Aeronautics Engineering Final undergraduate project: Optimal task scheduling of a robotic arm using Genetic Algorithms Advisor: Prof. Nikos Aspragathos
1994-1997	**Experimental High School of the University of Patras** Grade: 18 7/10

LANGUAGES

English	Excellent (Certificate of Proficiency in English)
German	Very good (Mittelstufe)

ACADEMIC EXPERIENCE

CURRENT PROFESSIONAL EMPLOYMENT

2020-…	**Assistant Professor** University of West Attica, School of Engineering, Department of Industrial Design & Production Engineering

PREVIOUS ACADEMIC EXPERIENCE

2017-2019	Visiting Professor at the Hellenic Air Force NCO Academy
2017-2018	Visiting Professor at the Department of Computer Engineering, Technological Educational Institute (TEI) of Piraeus.
2009-2020	Visiting Professor at the Department of Mechanical Engineering, Technological Educational Institute (TEI) of Piraeus.

2008-2011	Visiting Professor at the Department of Mechanical Engineering, Technological Educational Institute (TEI) of Patras.

TEACHING EXPERIENCE

Undergraduate courses

2020-today	"**Intelligent Systems**", Department of Industrial Design & Production Engineering, University of West Attica
2020-today	"**Artificial Intelligence**", Department of Industrial Design & Production Engineering, University of West Attica
2018-today	"**Industrial Robotics**", Department of Mechanical Engineering, University of West Attica
2020-2021	"**Industrial Robotic Systems**", Department of Industrial Design & Production Engineering, University of West Attica
2018-2019	"**Mechatronics**", Department of Mechanical Engineering, University of West Attica
2018-2019	"**Mechanical Design**", Hellenic Air Force NCO Academy
2018-2019	"**Machine Elements**", Hellenic Air Force NCO Academy
2018-2019	"**Fluid Mechanics**", Hellenic Air Force NCO Academy
2018-2019	"**Hydraulic-Pneumatic Systems**", Hellenic Air Force NCO Academy
2017-2018	"**Manufacturing processes**", Hellenic Air Force NCO Academy
2016-2018	"**Design of Mechanical Installations using CAD**", Department of Mechanical Engineering, University of West Attica
2016-2017	"**Mechanical Design**", Department of Mechanical Engineering, University of West Attica
2009-2014	"**Mechanical Design II**", Department of Mechanical Engineering, University of West Attica
2009-2014	"**Mechanical Design I**", Department of Mechanical Engineering, University of West Attica

2009-2011	"**Industrial Automation**", Department of Mechanical Engineering, TEI of Patras
2009-2010	"**Robotics**", Department of Mechanical Engineering, TEI of Patras
2008-2011	"**Design using CAD tools/Computer-Aided-Design**", Department of Mechanical Engineering, TEI of Patras
2004-2008	"**Applications of Artificial Intelligence**", Department of Mechanical & Aeronautics Engineering, University of Patras
2002-2008	"**Robotics**", Department of Mechanical & Aeronautics Engineering, University of Patras
2002-2008	"**Electrical Circuits and Machines**", Department of Mechanical & Aeronautics Engineering, University of Patras

Postgraduate courses

2021-today	**"Advanced Intelligent Control and Robotic systems",** Artificial Intelligence and Deep Learning, University of West Attica
2019-today	"**Mechatronic Design & Automation**", Advanced Industrial & Manufacturing Systems, University of West Attica
2019-today	"**Applications of Industrial & Operational Control**", Production and Service Automation, University of West Attica
2019-today	"**Design of naval automation and electrical propulsion systems**", New Technologies in Shipping and Transport, University of West Attica
2019-2020	"**Advanced Control Systems**", New Technologies in Shipping and Transport, University of West Attica

RESEARCH ACTIVITIES

Research Interests

My research interests lie in the field of **Production Planning and Control** and its interface with **Robotics**, **Automation Systems, Artificial Intelligence** and **Heuristics**. My work focuses on planning and scheduling of manufacturing and production systems where robots or human workers are employed aiming at the optimization of multi-criteria. In particular, my current research activity (with published work) lies primarily in:

- Robotics logistics and intelligent transportation systems: (motion planning, navigation, routing and scheduling of autonomous service vehicles).
- Logistics and Supply chain management (planning and balancing of assembly lines, vehicles routing and scheduling).
- Production planning and control (operations scheduling, resources allocation, workload balancing).
- Combinatorial optimization and heuristic search (AI heuristic search, metaheuristics in search, optimization and decision making).

Research Experience

Participation in Funded Research Projects

2013-2014	**"ARCHIMEDES III - Integrated processing and production planning"** Development of simulation models of machining operation by machine tools for the construction of robotic arms using Computational Intelligence methods, implementation of the models in laboratory conditions and integration of these models in a complete technological programming model.
2008-2009	**"ARCHINET – ARCHIMED Interreg III"** Participation in the design of the know-how transfer center in the context of the cooperation of research centers and science parks. In this context, an intelligent system based on Neural Networks was developed to predict floods in high-risk areas.

2007-2008	**“INNOVA–Actions for the transfer of innovation in common strategic sectors STRATEGIC SECTOR: Energy and Environment”** Participation in seminars ‘Energy & Environment’ in Greece and Italy in order to exchange and transfer know-how for Renewable Energy Sources (RES) between the two countries, as well as the transfer of know-how and innovations to companies. In this context, the role of autonomous systems and robotics in RES to reduce operating costs and increase efficiency and safety of work was studied.
2006-2008	**“Intelligent Production Machines and Systems (I*PROMS NoE)”** Participation within the cluster of the network in the circulation of ideas on robotic technology, development of intelligent robotic control systems for sewing fabrics in industrial environments with the aim of producing ready-made garments and development of methodologies for route planning and control of robotic movement in an obstacle environment.
2003-2006	**PENED 2001: "Handling of super-flexible materials in the form of a sheet with robots"** Research work aimed at developing robot control strategies for handling fabrics at the seam based on Computational Intelligence methods (Fuzzy Logic, Neural Networks, Genetic Algorithms) and Vision Feedback. The ultimate goal is the production of ready-made garments exclusively using robots and intelligent systems. Participation in seminars ‘Utilization of Research and Technological (S&T) Knowledge’ on research technology, management of research and innovation, evaluation of technology and exploitation of (S&T) knowledge in economic and social development.

Publications

My published work (see the full list below) includes 34 articles classified as in the following:

- 20 articles published in refereed international scientific journals (all ranked in ISI Web of Knowledge with impact factor);
- 12 publications presented in international scientific conferences.
- 2 publications in book chapters.

REVIEWER

For the following international scientific journals:

1. Robotica
2. Robotics and Computer-Integrated Manufacturing
3. International Journal of Robotics and Automation
4. International Journal of Advanced Robotic Systems
5. Industrial Robot
6. Mathematical Problems in Engineering
7. Assembly Automation
8. Journal of Behavioral Robotics
9. Advances in Mechanical Engineering
10. International Journal of Physical Sciences
11. Computers & Operations Research
12. Expert Systems With Applications
13. Journal of the Operational Research Society
14. International Journal of Production Research
15. Intelligent Transportation Systems Research
16. Engineering Optimization
17. IEEE Access

For the following international conferences:

1. 2nd IEEE International Conference on Industrial Informatics (INDIN'04), June 24–26, 2004, Berlin, Germany
2. 1st IPROMS Virtual conference on Intelligent Production, Machines & Systems, July 3–14, 2006
3. 2nd IPROMS Virtual International Conference on Intelligent Production Machines and Systems, 2–13 July 2007
4. 3rd IPROMS Virtual International Conference on Intelligent Production Machines and Systems, 1–14 July 2008
5. 1ο Πανελλήνιο Συνεδρίου Ρομποτικής, 23–24 Φεβρουαρίου 2009, Αθήνα, Ελλάδα.
6. ASME/IFToMM International Conference on Reconfigurable Mechanisms and Robots (ReMAR 2009), June 22–24 2009, London, UK.
7. 17th Mediterranean Conference on Control and Automation, June 24-26, 2009, Thessaloniki, Greece
8. 7th IEEE International Conference on Industrial Informatics (INDIN'04), June 24–26, 2009, Cardiff, UK

LIST OF PUBLICATIONS

Journals

1. P.Th.Zacharia and N.A.Aspragathos, "Optimal robot task scheduling based on Genetic Algorithms", Robotics and Computer-Integrated Manufacturing, vol.21, no.1, pp. 67-79, 2005.
2. P.Zacharia, A.Menti, Th.Zacharias, "Genetic algorithm-based optimal design of shunt compensators in the presence of harmonics", Electric Power Systems Research, vol.78, no.4, pp.728-735, 2008.
3. P.Th.Zacharia, I.G. Mariolis, N.A.Aspragathos and E.S.Dermatas, "Robot handling fabrics with curved edges based on visual servoing and polygonal approximation", Special

Issue of Proceedings of the Institution of Mechanical Engineers, Part B, Journal of Engineering Manufacture, vol.222, no. 10, pp. 1263-1274, 2008.

4. P.Th.Zacharia, N.A.Aspragathos, I.G. Mariolis and E.S.Dermatas, "A robotic system based on fuzzy visual servoing for handling flexible sheets lying on a table", Industrial Robot, vol.36, no. 5, pp. 489-496, 2009.

5. P.Th.Zacharia, "An adaptive neuro-fuzzy inference system for robot handling fabrics with curved edges towards sewing", Journal of Intelligent and Robotic Systems, vol.58, no. 3, pp. 193-209, 2010.

6. E.K.Xidias, P.Th.Zacharia, N.A.Aspragathos, "Time-Optimal task scheduling for articulated manipulators in environments cluttered with obstacles", Robotica, vol.28, no. 3, pp. 427-440, 2010.

7. E.K.Xidias, P.Th.Zacharia, N.A.Aspragathos, "Time optimal task scheduling for two-robotic manipulators operating in 3D environments", Special Issue of the Proceedings of the Institution of Mechanical Engineers, Part I, Journal of Systems and Control Engineering, vol.224, no. 7, pp. 845-855, 2010.

8. P.Zacharia, F.Stefanou, C.Stylios, P.Groumpos, "Experiences and lessons learnt from an interregional growth project: the role of innovation and STPs", Special Issue of International Journal of Innovation and Regional Development (IJIRD), Vol.3, No.3/4, 395-415, 2011.

9. P.Th.Zacharia and A.C.Nearchou, "Multi-objective fuzzy assembly line balancing using Genetic Algorithms", Journal of Intelligent Manufacturing, vol. 23, no. 3, pp. 615-627, 2012.

10. P.Th.Zacharia, E.K.Xidias and N.A.Aspragathos, "Task Scheduling and Motion Planning for an industrial manipulator", Robotics and Computer-Integrated Manufacturing, vol. 29, pp. 449-462, 2013.

11. P.Th.Zacharia and A.C.Nearchou, "A meta-heuristic algorithm for the fuzzy assembly line balancing type-E problem", Computers & Operations Research, vol. 40, no. 12, pp. 3033-3044, 2013.

12. K.P. Moustris, P.T. Nastos, A. Bartzokas, I.K. Larissi, P.T. Zacharia and A.G. Paliatsos, "Energy consumption based on heating/cooling degree days within the urban environment of Athens, Greece", Theoretical and Applied Climatology, vol.122, no.3, pp. 517-529, 2015.

13. P. Zacharia, S. Tsirkas, G. Kabouridis and G. Giannopoulos, “Planning the construction process of a robotic arm using a genetic algorithm”, International Journal of Advanced Manufacturing Technology, vol. 79, no.5, pp. 1293-1302, 2015.

14. P.Th.Zacharia and A.C.Nearchou, “A population-based algorithm for the bi-objective assembly line worker assignment and balancing problem”, Engineering Applications of Artificial Intelligence, vol. 49, pp. 1-9, 2016.

15. E.K.Xidias, P.Th.Zacharia and A.C.Nearchou, “Path Planning and scheduling for a fleet of autonomous vehicles”, Robotica, vol. 34, no. 10, pp. 2257-2273, 2016.

16. P. Zacharia, S. Tsirkas, G. Kabouridis, A. Yiannopoulos and G. Giannopoulos, “Genetic-based Optimization of the Manufacturing Process of a Robotic Arm under Fuzziness”, Mathematical Problems in Engineering, vol. 2018, pp. 1-12, 2018.

17. P.Th.Zacharia and E.K.Xidias, “AGV Routing and Motion Planning in a Flexible Manufacturing System using a Fuzzy-based Genetic Algorithm”, The International Journal of Advanced Manufacturing Technology, vol. 109, no. 7-8, pp. 1801-1813, 2020.

18. P.Th.Zacharia and A.C.Nearchou, “The fuzzy assembly line worker assignment and balancing problem”, Cybernetics & Systems, vol. 52, no. 3, pp.221-243, 2021.

19. P.Th.Zacharia and A.C.Nearchou, "Balancing assembly lines operating with heterogeneous workers under uncertainty in task processing times", Engineering Computations, 2021.

20. P. Zacharia, C. Drosos, D. Piromalis, M. Papoutsidakis, “The Vehicle Routing Problem with Fuzzy Payloads considering Fuel Consumption”, Applied Artificial Intelligence, 2021.

Conferences

1. P.Th.Zacharia and N.A.Aspragathos, “Optimization of industrial Manipulators Cycle Time Based on Genetic Algorithms”, pp. 517-522, 2nd IEEE International Conference on Industrial Informatics INDIN’04, 24-26 June, Berlin, Germany, 2004.

2. P.Th.Zacharia, I.G.Mariolis, N.A.Aspragathos and E.S.Dermatas, “Visual servoing of a robotic manipulator based on fuzzy logic control for handling fabric lying on a table”, 1st I*PROMS Virtual International Conference on Intelligent Production Machines and Systems, pp.411-416, 4-15 July 2005.

3. P.Koustoumpardis, G.Zoumponos, P.Zacharia, I.Mariolis, I.Chatzis, G.Evangelidis, A.Zampetakis, “Handling of non-rigid materials (XROMA), Application in robotic sewing”,

37th International Symposium on novelties in Textiles, 15–17 June 2006, Ljubljana, Slovenia, pp.528-533.

4. P.Th.Zacharia, I.G. Mariolis, N.A.Aspragathos and E.S.Dermatas, "Visual servoing controller for robot handling fabrics of curved edges", I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems, pp.301-306, 3-14 July 2006.

5. P.Th.Zacharia, I.G. Mariolis, N.A.Aspragathos and E.S.Dermatas, "Polygonal approximation of fabrics with curved edges based on Genetic Algorithms for robot handling towards sewing", CIRP ICME, pp. 603-608, 25-28 July 2006, Ischia, Italy.

6. P.Zacharia, G.Zoumponos, P.Koustoumpardis, A.Zampetakis, N.Aspragathos, "Robot handling of non-rigid materials for the sewing process", International Textile, Clothing & Design Conference (ITCDC), pp.528-533, 8-11 October 2006, Dubrovnik, Croatia.

7. E.K.Xidias, P.Th.Zacharia, N.A.Aspragathos, "Optimal task scheduling for Coordinate Measuring Machines", 8th International Conference and Exhibition on Laser Metrology, Machine Tool, CMM & Robotic Performance (LAMDAMAP), pp. 400-409, 25-28 June 2007, Cardiff, UK.

8. P.Th.Zacharia, E.K.Xidias, N.A.Aspragathos, "Task scheduling with obstacle avoidance for industrial manipulators operating in 3D environments", I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems, pp.395-400, 2-13 July 2007.

9. P.Th.Zacharia and N.A.Aspragathos, "Genetically oriented clustering using variable length chromosomes", I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems, pp.204-209, 1-14 July 2008.

10. Π.Ζαχαρία και Ν.Ασπράγκαθος, "Νευρο-Ασαφής κατευθυντής για το χειρισμό καμπύλων υφασμάτων με ρομπότ", 1ο Πανελλήνιο Συνεδρίου Ρομποτικής, 23 και 24 Φεβρουαρίου, Αθήνα 2009.

11. E.K.Xidias, P.Th.Zacharia, N.A.Aspragathos, "Optimal task scheduling for a two-robot workcell", I*PROMS NoE Virtual International Conference on Intelligent Production Machines and Systems, pp.322-327, 1-14 July 2009.

12. K.P. Moustris, P.T. Zacharia, I.K. Larissi, P.T. Nastos, A.G. Paliatsos, "Cooling and heating degree-days calculation for representative locations within the greater Athens area, Greece", 12th International Conference on Environmental Science and Technology (CEST2022), pp. 1279-1286, 8-10 September 2011, Rhodes.

Book chapters

1. P.Koustoumpardis, P.Zacharia, N.Aspragathos, "Intelligent robotic handling of fabrics towards sewing", Industrial Robotics: Programming, Simulation and Applications, pIV pro literature Verlag Robert Mayer-Scholz, Chapter 28, pp.559-582, February 2007.

2. P.Zacharia, "Robot handling fabrics towards sewing using Computational Intelligence Methods", Robot Control, InTech, ISBN: 978-953-307-940-0, Chapter 4, pp. 61-84, February 2012.

CITATIONS

- According to Google Scholar: *620* citations
  - *h-index = 12*
- According to Scopus: *404* citations
  - *h-index = 10*
- According to Web of Science: *329* citations
  - *h-index = 9*