# Curriculum Vitae

**Dr. Vassilis C. Moulianitis**

Assistant Professor

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## Education

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| 1991-96 | **Mechanical Engineering Diploma**  Department of Mechanical Engineering and Aeronautics, University of Patras. |
| 1996-2004 | **Ph.D. Diploma**  Department of Mechanical Engineering and Aeronautics, University of Patras.  Title: “**Modeling of the conceptual design phase based in Artificial Intelligence techniques- Application to Mechatronics Design**”. |

## Current Academic Occupation

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| Feb. 2018- | Assistant Professor in the Dept. of Product and Systems Design Engineering, University of the Aegean. |

## Research Activity

### Research Interests

My research interests are focused in the Theory and Methodologies of Design using Artificial Intelligence techniques, Mechatronics and Robotics and in the computational intelligent control methods. More specific:

* Design of mechatronic products and systems focused on modeling phases of the conceptual design phase.
* Design of controllers for robotic arms, mechatronic systems and for rehabilitation of lower limb disabilities.
* Design of medical devices.
* Design of robotic cells with metamorphic arms.
* Mechatronic gripper design.
* Robot Kinematics.

Artificial intelligence techniques such as Fuzzy Logic and Genetic Algorithms as well as multi-objective optimization have been used towards the solution of the aforementioned problems.

### Papers

* 16 papers in international journals.
* 7 Chapter Books.
* Editor of a Special issue in Mechatronics.
* 38 conference papers in National and International Conferences and Workshops.

### Citations

Please visit: <http://scholar.google.gr/citations?user=4wywV-8AAAAJ&hl=en>

### Reviewer

* Journals: Mechatronics, ASME Journal of Mechanical Design, Journal of Systems and Control Engineering, Journal of Engineering Design, IPSI BgD Transactions on Internet Research, Information Sciences, Information Sciences, WSEAS Information sciences and applications, Journal of Mechanical Engineering Science, JJMIE, IJAAC, IJHISI, Journal of Robotics, The Open Automation and Control Systems Journal.
* Conferences: European Control Conference ’07, 1st and 2nd Hellenic Robotics Conference, CGI 2013, MED 2013, GDSPM2015, ICINCO ’15 and ‘16, ICTAI 15, World Congress ‘15, ISRM ‘15, ReMAR 2015, SYROCO ‘15, EUCOMES ’16, MSM ’16

**Organization Committees**

* Member of the organizing committee of the 1st and 2nd Hellenic Robotics Conference.
* Member of the organizing committee of the Summer School of the University of the Aegean “Advanced technologies in Product Design, Engineering and Manufacturing “ that held in Syros island, Greece 1st - 11th July, 2013.

### Research Projects

I am participating in the submission and working in International and National funded research projects since 1997. I was the major researcher in two national and one international project.

### Research Project Evaluation

* Graduate Updating Knowledge Program (ΠΕΓΑ) of [Ministry of Education, Lifelong Learning and Religious Affairs](http://archive.minedu.gov.gr/en_ec_home.htm), Greece (2012).

### Memberships

* Member of Technical Chamber of Greece
* Member of Hellenic Society of Mechanical-Electrical Engineers.

## Journals

1. **V.C. Moulianitis**, A. J. Dentsoras and N. A. Aspragathos (1999). A knowledge-based system for the conceptual design of grippers for handling fabrics. *Artificial Intelligence in Engineering, Design, Analysis and Manufacturing*, 13, 13-25.
2. **V.C. Moulianitis**, N. A. Aspragathos and A. J. Dentsoras . A model for concept evaluation in design- An application to mechatronics design of robot grippers. Mechatronics 14 (2004) 599–622.
3. P. Azariadis, **V. Moulianitis**, S. Alemany, J. C. González, P. de Jong, M. van der Zande and D. Brands. Virtual Shoe Test Bed: A Computer-Aided Engineering Tool for Supporting Shoe Design, Computer Aided Design And Applications, 2007, 4(6), 741-750.
4. Philip Azariadis, **Vassilis Moulianitis**, Jose Olaso, Sandra Alemany, Juan Carlos González Pamela de Jong, Par Dunias, Marc van der Zande and Dave Brands. An innovative virtual-engineering system for supporting integrated footwear design. Int. J. Intelligent Engineering Informatics, Vol. 1, No. 1, 2010.
5. R. F. Hamade, **V.C. Moulianitis**, D. D’Addonna, G. Beydoun. A dimensional tolerancing knowledge management system using Nested Ripple Down Rules (NRDR). [Engineering Applications of Artificial Intelligence](http://www.scopus.com/source/sourceInfo.url?sourceId=24182&origin=resultslist) 23 (7), pp. 1140-1148, 2010.
6. [**Moulianitis, V.C.**](http://www.scopus.com/authid/detail.url?origin=resultslist&authorId=6506258012), [Aspragathos, N.A.](http://www.scopus.com/authid/detail.url?origin=resultslist&authorId=35241692600), [Introduction to the special issue on Theories and Methodologies for mechatronics design](http://www.scopus.com/record/display.url?eid=2-s2.0-78649510097&origin=resultslist&sort=plf-f&src=s&st1=moulianitis&sid=ajZmrkDkqpLFnJisuLQqniQ%3a30&sot=b&sdt=b&sl=24&s=AUTHOR-NAME%28moulianitis%29&relpos=0&relpos=0&searchTerm=AUTHOR-NAME%28moulianitis%29), [Mechatronics](http://www.scopus.com/source/sourceInfo.url?sourceId=21096&origin=resultslist) 20 (8), pp. 825-826, 2010
7. Dimitris Oikonomou; **Vassilis Moulianitis**; Dimitris Lekkas; Panayiotis Koutsabasis. Decision Support System Design for the Hellenic Centre of Health Emergency Response. [International Journal of User-Driven Healthcare (IJUDH)](http://www.igi-global.com/bookstore/titledetails.aspx?titleid=41022), 1, 2, pp. 39-56, 2011. Also, appeared in Clinical Solutions and Medical Progress through User-Driven Healthcare. IGI Global, 2013. 51-69
8. Charalampos Valsamos, **Vassilis Moulianitis**, Nikos Aspragathos. Index based optimal anatomy of a metamorphic manipulator for a given task. [Robotics and Computer-Integrated Manufacturing](http://www.scopus.com/source/sourceInfo.url?sourceId=18080&origin=resultslist) 28 (4) , pp. 517-529, 2012
9. Nikos Giannopoulos, **Vasilis C. Moulianitis** and Andreas C. Nearchou, Multi-objective optimization with fuzzy measures and its application to flow-shop scheduling, Engineering Applications of Artificial Intelligence 25(7), pp. 1381-1394, 2012.
10. Fotios Dimeas, Dhionis V Sako, **Vassilis C Moulianitis** and Nikos A Aspragathos. Design and fuzzy control of a robotic gripper for efficient strawberry harvesting. Robotica FirstView:1–14, May 2014.
11. C Valsamos, **V Moulianitis** and N Aspragathos. Kinematic Synthesis and Evaluation of Structure Topologies for Metamorphic Serial Manipulators. Journal of Mechanisms and Robotics 6(4), 2014.
12. N Konstantopoulos, V Syrimpeis, **V Moulianitis**, I Panaretou, N Aspragathos and E Panagiotopoulos. A Smart Card based Software System for Surgery Specialties. International Journal of User-Driven Healthcare, 2014
13. A I Synodinos, **V C Moulianitis** and N A Aspragathos. A fuzzy approximation to dexterity measures of mobile manipulators. Advanced Robotics 0(0):1-17, 2015.
14. C Valsamos, **V C Moulianitis**, A I Synodinos and N A Aspragathos. Introduction of the high performance area measure for the evaluation of metamorphic manipulator anatomies. Mechanism and Machine Theory 86(0):88 - 107, 2015.
15. **Moulianitis, V. C.**, Synodinos, A. I., Valsamos, C. D., & Aspragathos, N. A. Task-based optimal design of metamorphic service manipulators. Journal of Mechanisms and Robotics, 2016.
16. V.N. Syrimpeis, **V.C. Moulianitis**, N.A. Aspragathos & E.C. Panagiotopoulos. A knowledge based system for the selection of muscles for gait phase detection using EMGs, [International Journal of Healthcare Information Systems and Informatics](https://www.scopus.com/sourceid/20100195036?origin=resultslist" \o "Show source title details) 12(2), pp. 18-45.

### Under Review

1. **V. C. Moulianitis**, G-A D Zachiotis, Nikos Aspragathos. A new index based on mechatronics abilities for the conceptual design evaluation. A revised version submitted to Mechatronics (June 2017).
2. Dimeas, F., **Moulianitis, V. C.**, & Aspragathos, N. Manipulator Performance Constraints for Human-Robot Cooperation. Υποβλήθηκε για δημοσίευση στο . [Robotics and Computer-Integrated Manufacturing](http://www.scopus.com/source/sourceInfo.url?sourceId=18080&origin=resultslist), 2017.

## Book Chapters

1. **V.C. Moulianitis**, N. A. Aspragathos and A. J. Dentsoras. [Fuzzy Representation and Synthesis of Concepts in Engineering Design](http://www.springerlink.com/content/718660tx0r451431/). Lecture Notes in Artificial Intelligence 5138, 160-172, 2008.
2. H. Valsamos, **V. Moulianitis**, N. Aspragathos, Rapid Evaluation of Reconfigurable Robots Anatomies using Computational Intelligence. [Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)](http://www.scopus.com/source/sourceInfo.url?sourceId=25674&origin=resultslist) 6277 LNAI (PART 2), pp. 341-350, 2010.
3. Charalampos Valsamos, **Vassilis C. Moulianitis** and Nikos Aspragathos, Metamorphic Structure Representation - Designing and Evaluating Anatomies of Metamorphic Manipulators, [Advances in Reconfigurable Mechanisms and Robots I](http://www.springerlink.com/content/978-1-4471-4140-2/), Part 1, 3-11, 2012.
4. **V C Moulianitis** and N A Aspragathos. IT and Mechatronics in Industrial Robotic Workcell Design and Operation. In Encyclopedia of Information Science and Technology. IGI Global, 2014.
5. **Vassilis C Moulianitis**, Evgenios M Kokkinopoulos and Nikos A Aspragathos. A Method for the Approximation of the Multiple IK Solutions of Regular Manipulators Based on the Uniqueness Domains and Using MLP. In Saïd Zeghloul, Med Amine Laribi and Jean-Pierre Gazeau (eds.). Robotics and Mechatronics. Mechanisms and Machine Science series, volume 37, Springer International Publishing, 273-281, 2016.
6. **V.C. Moulianitis**, N.A. Aspragathos, C Valsamos. [Suboptimal anatomy of metamorphic manipulators based on the high rotational dexterity](https://scholar.google.gr/citations?view_op=view_citation&hl=en&user=4wywV-8AAAAJ&sortby=pubdate&citation_for_view=4wywV-8AAAAJ:DrR-2ekChdkC) Advances in Reconfigurable Mechanisms and Robots II, 509-519,2016.
7. **Moulianitis, V.,** Vogiatzief, D. and Aspragathos, N., 2017. A Constructive Method for the Approximation of the Multiple Inverse Kinematics Solutions of Noncuspidal 6 DoF Manipulators. In New Trends in Mechanism and Machine Science (pp. 493-502). Springer International Publishing.

## Conference papers (full paper)

### International

1. **Moulianitis V. C.**, C. J. Tsaprounis, N. A. Aspragathos (1997). On-line gain adjustment of a robot controller, using fuzzy logic. Fifth IFAC Symposium on Robot Control 1997 Nantes France, 2, 385-390.
2. **Moulianitis V.C.**, A. J. Dentsoras & N. A. Aspragathos (1998). “A Search Method in Knowledge-Based Systems using Euclidean Space Norm - An Application to Design of Robot Grippers”, AIENG ‘98, Galway, Ireland, 247-260.
3. **VC Moulianitis**, AJ Dentsoras, NA Aspragathos (1999)." Τhe Euclidean Space Inner Product in a Heuristic Method for Knowledge-Based Conceptual Design of Robot Grippers". CACD' 99, Lancaster, UK 37-48.
4. **V. C. Moulianitis**, Z. Zoller, P. Zentay, N. A. Aspragathos, G. Arz, A. Toth (2000), Knowledge-Aided Conceptual Design of Grippers for Handling Polyurethane Foam Parts. UMTIK’ 2000, Ankara, Turkey, (CD-ROM).
5. P.N. Politis, **V. C. Moulianitis**, N. A. Aspragathos (2001). Robot control based on coriolis and centrifugal terms fuzzification. ASME International Mechanical Engineering Congress and Exposition, Proceedings v 2 2001. Also in American Society of Mechanical Engineers, Dynamic Systems and Control Division (Publication) DSC v 70 2002. p 1041-1048
6. S. G. Papageorgiou, **V. C. Moulianitis**, N. A. Aspragathos (2003). Transfer VM concepts to cloth design and manufacturing, Eurasia-Tex Conference on 3D Body Scanning and Virtual Try-On Systems, Athens, pp 41-49, Nov 2003.
7. **Moulianitis V. C.** and Aspragathos N. A. Design Evaluation with Mechatronics index using the Discrete Choquet Integral. Mechatronics 2006, 4th IFAC-Symposium on Mechatronic Systems, Heidelberg, Germany, September 12th-14th, 2006.
8. **V. Moulianitis**, K. Saridakis, S. Papageorgiou, V. Syrimpeis, A. Dentsoras, N. Aspragathos, Application of soft computing techniques in the design of robot grippers, International Conference on Engineering Design, ICED’07, 28 - 31 August 2007, Cite Des Sciences Et De L'Industrie, Paris, France, 2007.
9. V.N. Syrimpeis, L.L. Chiou, **V.C. Moulianitis**, N.A. Aspragathos, E.C Panagiotopoulos. On the development of an implantable μ-biomechatronic system for the rehabilitation of lower limb neuro-muscular disabilities. Third international conference on Multi-Material Micro Manufacturing, Borovets Bulgaria, 359-362, 2007.
10. **V.C. Moulianitis**, V.N. Syrimpeis, V. Kokkinos, N.A. Aspragathos, E.C. Panagiotopoulos. A Closed-Loop Drop-Foot Correction System with Gait Event Detection using Fuzzy Logic, Mechatronics 2008, Limerick, Ireland, 2008.
11. A.D. Louloudi, **V.C. Moulianitis**. TherapainiS –A socially assistive robot for the elders. The 2008 I\*PROMS Conference on Innovative Production Machines and Systems, Also invited to be presented in 2008 I\*PROMS Researcher Symposium, Cardiff, 2008.
12. **V.C. Moulianitis**, V.N. Syrimpeis, N.A. Aspragathos E.C. Panagiotopoulos. An Expert System for Supporting the Conceptual Design of Controllers for Lower Limbs Rehabilitation Systems. IEEE 17th Mediterranean Conf. on Control and Automation. June 24-26, 2009, Makedonia Palace, Thessaloniki, Greece.
13. H. Valsamos **V. Moulianitis** N. Aspragathos, A Generalized Method for Solving the Kinematics of 3 D.O.F. Reconfigurable Manipulators, The 2009 I\*PROMS Conference on Innovative Production Machines and Systems.
14. H. Valsamos **V. Moulianitis** N. Aspragathos. Rapid evaluation of anatomies for metamorphic robots based on dynamic manipulability using an ANFIS system. Multibody Dynamics 2011, ECCOMAS, July 4-7 2011, Brussels, Belgium, 2011.
15. **Vassilis C. Moulianitis**, Vasileios N. Syrimpeis, Nikolaos A. Aspragathos and Elias C. Panagiotopoulos. A Closed-Loop Drop-Foot Correction System with Gait Event Detection from the Contralateral Lower Limb using Fuzzy Logic, 10th International Workshop on Biomedical Engineering, 5-7 October 2011, Kos Island, Greece, 2011.
16. Fotios Dimeas, Dhionis V. Sako, **Vassilis C. Moulianitis** and Nikos A. Aspragathos (2013). Towards designing a robot gripper for efficient strawberry harvesting. In RAAD 2013. 2013, 220-226.
17. I. Papanikolaidi, A. Synodinos, **V.C. Moulianitis**, N. Aspragathos, E.K. Xidias (2013). Optimal Base placement of the Da Vinci System based on the Manipulability Index. In RAAD 2013. 2013, 262-268.
18. **Vassilis C. Moulianitis**, Nikos A Aspragathos, Aris I Synodinos and Charalampos D. Valsamos.Task-based optimal design of serial metamorphic manipulators. Accepted for presentation in ICRA 2014 WS Task Based Optimal Design of Robots, 2014.
19. Fotios Dimeas, **Vassilis C Moulianitis**, Charalampos Papakonstantinou and Nikos Aspragathos.Manipulator Performance Constraints in Cartesian Admittance Control for Human-Robot Cooperation. In IEEE International Conference on Robotics and Automation, 2016, 3049-3054.
20. Charalampos Valsamos, **Vassilis Moulianitis** and Nikos Aspragathos. Experimental verification of the advantages of a modular open chain metamorphic manipulator. In 47th International Symposium on Robotics (ISR2016), 2016, 215-221.
21. **Moulianitis V. C.,** Katrantzis E. F., Stravopodis N. A. and Aspragathos N. A.A comparative study of three manipulator performance measures. 26th International Conference on Robotics in Alpe-Adria-Danube Region. 2017
22. **V.C. Moulianitis**, G. Zachiotis, C. Valsamos, N.A. Aspragathos, Evaluation of manipulators under CPPS frame. Accepted for presentation in World Congress 2017.

### National

1. Χ.Δ. Βάλσαμος, **Β.Χ. Μουλιανίτης**, Ν.Α. Ασπράγκαθος. Δείκτης αξιολόγησης ανατομιών μεταμορφικού ρομποτικού βραχίονα και υπολογισμός αυτού μέσω συστήματος ANFIS. 2o Πανελλήνιο Συνέδριο Ρομποτικής, 9-10 Δεκεμβρίου 2010 Πάτρα, 2010.
2. Χ.Δ. Βάλσαμος, **Β.Χ. Μουλιανίτης**, Ν.Α. Ασπράγκαθος. Διαμόρφωση ανατομίας μεταμορφικού βραχίονα – Βέλτιστη τοποθέτηση εργασίας στο χώρος εργασίας αυτού. Μια συγκριτική μελέτη. 2o Πανελλήνιο Συνέδριο Ρομποτικής, 9-10 Δεκεμβρίου 2010 Πάτρα, 2010.

## abstract-Βased Conference Papers – Posters

### International

1. Repoulias F. D., **Moulianitis V. C.**, N. A. Aspragathos (1998). On-line parameter estimation of a robot controller, using fuzzy logic. IFAC LSS 1998 Rio Patras, 1120-1125.
2. **V. C. Moulianitis**, N. A. Aspragathos, A. J. Dentsoras (2001). An Index for the Mechatronic Design of Systems and Products. ASME, First National Conference on Recent Advances in Mechanical Engineering 2001, Patra, Greece (CD-ROM).
3. **V.C.Moulianitis** and N.A Aspragathos (2002). Integration of complexity in a mechatronics index. Mechatronics 2002, Twente, The Netherlands, 1494-1502.
4. Syrimpeis V.N., **Moulianitis V.C.**, Zerikiotis E.I., Aspragathos N.A., Panagiotopoulos E.C.(2006) An approach for the development of a fuzzy logic controller for the correction of the Drop-Foot syndrome. 5th World Congress of Biomechanics July 29 – August 4, 2006, Munich, Germany. Also in Journal of Biomechanics, Volume 39, Supplement 1, 2006, Page S31.
5. Syrimpeis V. N., **Moulianitis V. C.**, Zerikiotis E. I., Aspragathos N. A. and Panagiotopoulos E. C.(2006). A Drop-Foot syndrome correction system based in Fuzzy Logic. 5th European Symposium on BioMedical Engineering ESBME 2006.
6. Syrimpeis, Vasileios N., **Moulianitis, Vasileios C.**, Aspragathos, Nikolaos A., Panagiotopoulos, Elias C., A study of human locomotion for the design of rehabilitation systems based on Fuzzy Logic. 1st Joint ESMAC - GCMAS Meeting (JEGM06) Amsterdam, the Netherlands, September 28-30, 2006, Also in Gait & Posture,Volume 24, Supplement 2, 2006, Pages S288-S289.
7. **V.C. Moulianitis**, N.A. Aspragathos. Representation, Synthesis and Evaluation of Concepts in Engineering Design. 2nd I\*PROMS Researcher Symposium, Ischia, Italy, 2009.
8. Dimitris Oikonomou, **Vassilis Moulianitis**, Dimitris Lekkas, Panayiotis Koutsabasis . Decision Support System Design for Cooperation in Emergency Situations at the Hellenic Center of Emergency Response (EKAB), 2009 Workshop on Mobile Information Technology for Emergency Response, May 10th, 2009, Göteborg, Sweden, 2009.
9. **Vassilis Moulianitis**, Vasileios Syrimpeis, Nikolaos Aspragathos, Elias Panagiotopoulos, Maria Basia and Ioannis Fournianakis (2013). Expert system for gait event detection based on the gait cycle of both lower limbs. Accepted for POSTER PRESENTATION in the 19TH CONGRESS OF THE EUROPEAN SOCIETY OF BIOMECHANICS.

### National

1. Συρίμπεης Β. Ν., **Μουλιανίτης Β. Χ.**, Ασπράγκαθος Ν. Α., Παναγιωτόπουλος Ηλ. Χ. (2006) Σχεδιασμός ασαφούς ελεγκτή για την αποκατάσταση της Ιπποποδίας. 1o Συνέδριο Ελληνικής Εταιρείας Εμβιομηχανικής (ΕΛΕΜΒΙΟ) Τρίκαλα 15-16 Απριλίου 2006.
2. Χίου Λ. Λ., Συρίμπεης Β. Ν.,**Μουλιανίτης Β. Χ.**, Ασπράγκαθος Ν. Α., Παναγιωτόπουλος Ηλ. Χ.. Σχεδιασμός Νευρο-Ασαφούς Ελεγκτή για την Αποκατάσταση της Ιπποποδίας. 2o Συνέδριο Ελληνικής Εταιρείας Εμβιομηχανικής (ΕΛΕΜΒΙΟ), Αρχ. Ολυμπία, 4-6 Μαίου 2007.
3. A. Δ. Λουλούδη, **Β.Χ. Μουλιανίτης** Ρομποτικό σύστημα παροχής κοινωνικής βοήθειας. TherapainiS. Ανηρτημένη Ανακοίνωση στο 1ο Πανελλήνιο Συνέδριο Ρομποτικής. 23 - 24 Φεβρουαρίου 2009, Αθήνα, 2009.
4. Μ.Π. Ρουγγέρη, **Β. Μουλιανίτης**. Gribot- Οικιακό ρομπότ παροχής υπηρεσιών για ανάρτηση, τοποθέτηση και μεταφορά αντικειμένων. Ανηρτημένη Ανακοίνωση στο 2o Πανελλήνιο Συνέδριο Ρομποτικής, 9-10 Δεκεμβρίου 2010 Πάτρα, 2010.
5. Ιωάννου Δ., **Μουλιανίτης Β.**, Παπανίκος Π. Ρομποτικό σμήνος οικιακής εξυπηρέτησης: Μια διερευνητική προσέγγιση. Ανηρτημένη Ανακοίνωση στο 2o Πανελλήνιο Συνέδριο Ρομποτικής, 9-10 Δεκεμβρίου 2010 Πάτρα, 2010