Detailed Curriculum Vitae

Name: Aris I. Synodinos
Date of Birth: 26/12/1985
Place of Birth: Athens, Greece
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Education

PhD in Engineering, (On a break) 02/2009 - Current Date
University Of Patras - School of Engineering
Supervisors: N. Aspragathos, A. Tzes, M. Vrahatis
'Dexterous manipulation of a robotic mobile manipulator in unstructured environments'

Mechanical Engineering and Aeronautics Diploma, 09/2003 - 02/2009
University of Patras - School of Engineering
Grade: 7.60
Diploma Thesis: 'Self-Assembly of MEMS using electrostatic forces'

High School, 09/2000 - 06/2003
2nd High School of Kamatero, Athens
Grade: 17.9

Experience

Sr. Robotics Engineer, Private Employee at Myrmex-Inc 02/2016 - Current Date

- Designed infrastructure for mobile and manipulator robots in structured environment
- Design and develop robotics software (control, motion planning, scheduling, safety, drivers)
- Train members of the R&D department
- Develop software for Embedded Hardware
- Develop software for maintaining ROS components

Sr. Robotics Engineer, Freelancer at BOTA Systems 01/2016 - 9/2016

- Developed all software for products
- Architect and design communication protocol for products
- Lead the application to Kickstart Accelerator 2016 Program

Robotics Engineer, Freelancer 07/2014 - Current Date

- Robotics Researcher - Laboratory for Manufacturing Systems and Automation 07/2014 - 12/2015
- Robotics Engineer - Myrmex-Inc 10/2015 - 2/2016

Mechanical Engineer, GRNET SA - GFOSS 08/2015 - 10/2015

- OpenDeskLab - Development of a modular and reconfigurable laboratory desk
- https://github.com/ellak-monades-aristeias/OpenDeskLab
- https://opendesklab.readthedocs.org

Software Engineer, GRNET SA - GFOSS 08/2015 - 10/2015
- Docker integration in CMake/CPack
- https://github.com/ellak-monades-aristeias/CMake-Docker

Robotics Researcher, FP7 Research Program 'EuRoC' 07/2014 - 02/2016
- Developed software for RGB-D sensors using PCL
- Developed software for motion planning using MoveIt
- Developed software for hybrid control of industrial manipulator
- Participated in Experiments in Fraunhofer IPA

Robotics Researcher, FP6 Research Program 'I-Proms' 02/2009 - 2011
- Studied the dexterity optimization of robotic work cells
- Developed a fuzzy system to approximate the calculation of the jacobian condition number

Mechanical Engineer, FP6 Research Program '4M' 02/2009 - 2011
- Worked as a research assistant at IMTEK
- Studied the self-assembly of MEMS
- Developed simulation software for the electro-static driven self-assembly

Lab Instructor, Mechanical Eng. & Aeronautics Dept. 02/2009 - 02/2016
- Class of Mechatronics
- Class of Electrical Design
- Class of Robotics

Supervisor, 02/2009 - Current Date
Student Thesis - Dept. of Mechanical Eng. & Aeronautics
- Redesign and construction of small mobile robot for fire detection
- Design and construction of a small dexterous mobile robot (Solidworks)
- Design and construction of a SSRR mobile robot (Catia)
- Design and construction of a UAV quadcopter (Catia)
- Kinematic analysis and optimization of a parallel mechanism for tracked mobile robot
- Develop of a fuzzy controller for a line following mobile robot (Matlab / V-Rep)

Supervisor, 02/2009 - Current Date
Diploma Thesis - Dept. of Mechanical Eng. & Aeronautics
- Programming of a small mobile robot for fire detection (Arduino)
- Modelling and control of a tracked mobile robot (C++ / ROS)
- Development of a computer vision and robot control algorithm for strawberry harvesting (Python - OpenCV)
- Design and construction of a modular tracked suspension system (Solidworks)

Supervisor, 02/2009 - Current Date
Diploma Thesis - Dept. of Computer Eng. & Informatics
- Motion Planning in GPU (OpenCL / ROS)
- Navigation of Nao Humanoid robot in unknown environment (C++ / ROS)
- Victim idectification and classification in disaster sites (C++ / ROS - OpenCV)

Supervisor, 02/2009 - Current Date
Diploma Thesis - Dept. of Electrical & Computer Eng.
- SLAM in GPU (OpenCL)

Project Manager, Robotics Club 02/2009 - 02/2016

- Manager of team 'PolyMECHanon' to participate in RoboCUP Rescue League
- Lecturer for the training of new members

Tutor - Lecturer,

- GrabCAD Workshop - GFOSS at Innovathens 22/1/2016
- 2^{nd} LaTeX Workshop - Patras IEEE Student Branch 19/2/2015
- 1^{st} LaTeX Workshop - Patras IEEE Student Branch 19/4/2013
- LaTeX Workshop - P-Space 9/10/2012
- Beer Brewing - P-Space 5/10/2012
- Linux for beginners - P-Space 24/9/2012
- ROS Workshop - Robotics Club 15/10/2011 - 18/10/2011

Training

Seminars,

- Digital Design in VHDL & FPGA 11/2014 - 12/2014
  50 hours - Lectures, simulation, laboratory work and exams
- 2nd Seminar of 'Units of Excellence in Open Source' 07/2014 - 07/2014
  EL/LAK - Theme "Basic Tools - GRETL"
- Geothermal Energy 01/2007 - 01/2007
  Aid Engineering

Summer Schools,

- 1st Summer School of EL/LAK 'Units of Excellence' 05/2015 - 05/2015
  Theme "Basic Tools - GRETL" in Patras, Greece
- Safety Security and Rescue Robotics Summer School 2012 09/2012 - 09/2012
  Sponsored by IEEE-RAS in Alanya, Turkey
- ROS RoboCup Rescue Summer School 2012 08/2012 - 08/2012
  Graz, Austria, Track 2
- ROS RoboCup Rescue Summer School 2011 09/2011 - 09/2011
  Koblenz, Track 1
- 2nd Summer School of Artificial Intelligence - HAISS-11 07/2011 - 07/2011
  University of Patras

Publications & Awards

Journals,

1. J. Dalin, J. Wilde, A. Zulfiqar, P. Lazarou, A. Synodinos, N. Aspragathos, 'Electrostatic attraction and surface-tension-driven forces for accurate self-assembly of microparts', Microelectronic Engineering, Volume 87, Issue 2, February 2010, Pages 159-162
2. C. Valsamos, V.C. Moulianitis, A.I. Synodinos, N.A. Aspragathos, 'Introduction of the High Performance Area measure for the evaluation of metamorphic manipulator anatomies', Mechanism and Machine Theory, Volume 86, April 2015, Pages 88-107
3. A.I. Synodinos, V.C. Moulianitis, N.A. Aspragathos, 'A fuzzy approximation to dexterity measures of mobile manipulators', Advanced Robotics, Volume 29, March 2015, Pages 753-769
4. V.C. Moulianitis, A.I. Synodinos, C.D. Valsamos, N.A. Aspragathos, 'Task-based optimal design of metamorphic service manipulators', ASME. J. Mechanisms Robotics, Volume 8, Issue 6, 2016

Conferences,

1. J. Dalin, J. Wilde, A. Synodinos, P. Lazarou and N. Aspragathos, 'Concept for Fluidic Self-Assembly of Micro-Parts Using Electro-Static Forces', 4M Conference 2008, 9-11 September 2008, Cardiff, United Kingdom

2. A. Synodinos, N. Aspragathos 'Path planning of a mobile robot using solid modeling techniques on potential fields', Proceedings of 2010 IEEE / ASME International Conference on Mechatronic and Embedded Systems and Applications, MESA 2010, art. no. 5552011, pp. 549-553
3. A. Synodinos, N. Aspragathos 'A fuzzy approximation to the Jacobian condition number', 6th IPROMS Virtual Conference - 15-26 November 2010
4. A. Synodinos, N. Aspragathos 'Υπολογισμός δείκτη επιδεξιότητας ρομποτικού βραχίονα με χρήση ασαφούς λογικής' 2nd Greek Robotics Conference, 9-10 December 2010, University of Patras, Rio Achaia
5. A. Synodinos, N. Aspragathos 'Frame invariance of the dynamic manipulability measure, Multibody Dynamics 2011, An ECCOMAS Thematic Conference, 4th-7th July 2011, Université catholique de Louvain, Brussels, Belgium
6. I. Papanikolaidi, A. Synodinos, V.C. Moulianitis, N. Aspragathos, E.K. Xidias 'Optimal Base placement of the Da Vinci System based on the Manipulability Index', 22nd International Conference on Robotics in Alpe-Adria-Danube Region, RAAD 2013, pp. 262-268
7. A. Synodinos, N. Aspragathos 'Collision Planner - A probabilistic single stage smooth path planner for mobile robots', 23rd International Conference on Robotics in Alpe-Adria-Danube Region, RAAD 2014, pp. 1-8

Workshops,

1. V.C. Moulianitis, N.A. Aspragathos, A.I. Synodinos, C.D. Valsamos, 'Task-based optimal design of serial metamorphic manipulators', Task Based Optimal Design of Robots Workshop, IEEE International Conference on Robotics and Automation. 2014

Book Chapters,

1. P. Koustoumpardis, K. Chatzilygeroudis, A. Synodinos, N. Aspragathos 'Human robot collaboration for folding fabrics based on force-RGB-D feedback', Advances in Robot Design and Intelligent Control, Volume 371, 2015, Pages 235-243

Awards,

1. 'Best contribution on an Open Source Software' by the GFOSS - GRNET for the contribution in https://github.com/progtologist/gretl

Programming Experience

Github Projects, https://github.com/progtologist

- p2os
  ROS Driver and tools for Pioneer Robots (C++)
- gazebo-tracks
  A script that can create a track driven sdf model for gazebo. (Python, XML)
- gretl-cmake
  Converted the popular GNU-GPL econometrics program from autotools to CMake, reorganized code, built doxygen documentation, automated build and testing system
- ros_pioneer
  A ROS driver for all Pioneer Robots written from scratch with numerous improvements over p2os (C++)
- hand_publisher
  This package contains the source code for the skeleton tracking and communication for fabric folding using the Adept Scara robot, the Kinect openni2_tracker ROS package and a vision sensor or the Kinect One sensor with JSON communication over a windows machine.

Private Projects, Access to these projects is given per request only.

- euroc_package
  ROS software packages for the Universal Robots UR10 manipulator for the EUSMART team.
- p3-at
  ROS software packages for the P3AT robot, including navigation and motion planning integration as well as rqt_dashboard
- ros-navigation-collision-planner
  ROS plugin for the move_base global planner package providing a novel approach on mobile robots path planning
- vhdl
  VHDL code that was developed as part of the Digital Design in VHDL & FPGA seminar.
- h-fuzzy
  A hierarchical fuzzy library (Under development - C++/Doxygen)
- Collision Planner
  A probabilistic path planning algorithm (C++11, OpenMP, Boost)

Websites Developed,

- http://www.mech.upatras.gr/ robgroup/
  The old website of the robotics club (PivotX, CSS)
- http://www.vinyl-radio.org/
  The website of an amateur web radio (html, jQuery, JavaScript, CSS)

Programming,

>5000 lines:	C++, C++11, Matlab, Shell (Bash, Zsh), LaTeX
>1000 lines:	C, Python, OpenMP, html, NumPy, SciPy, JavaScript, VHDL
<1000 lines:	Arduino, php, CSS, MySQL, PostgreSQL, jQuery, OpenCL, Go, Lua, TikZ, PGF
Protocols & API:	ROS, QT, Boost, Google Test, Eigen3, PCL OpenCV, XML, YAML, JSON
Tools:	git, hg, svn, CMake, Make, Gazebo, Doxygen, Docker, LibreOffice, MS Office, Sublime Text, QtCreator, CMS (Wordpress, Drupal, PivotX)
CAD/EDA:	Catia, Solidworks, UGS NX, AutoCAD, Ansys, KiCAD, Eagle
Operating Systems:	MS Windows (XP, Vista, 7, 8, 10) Linux (Ubuntu, Debian, Arch, CentOS)

Personal skills and competences

Languages:	Greek, Mother tongue English, First Certificate in English - Grade B - 2001
Interests:	Electronics, Mechatronics, DIY, Cycling, Music, Audio, Radio Broadcasting, Photography, Reading, Programming