

Curriculum Vitae

Savvas G. Loizou

45 Kitiou Kyprianou Str., Dorothea Bldg 507, Cyprus University of Technology, Limassol 3041, CYPRUS
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EDUCATION

Doctor of Philosophy, Mechanical Engineering, National Technical University of Athens (NTUA)

Thesis: Automated planning of motion tasks for teams of multiple micro-robotic systems
Advisor: Prof. Kostas J. Kyriakopoulos
Duration: November 2000 – September 2005

Diploma in Mechanical Engineering, National Technical University of Athens (NTUA)

Diploma Thesis: Coordinating the Motion of a Manipulator and a Non Holonomic Mobile Base in 3-D Environments
Graduation Rank: 7th out of a class of 168 students (Highest 5 %)
Duration: September 1995 – October 2000

ACADEMIC EMPLOYMENT

Associate Professor

May 2020 onwards

Cyprus University of Technology, Limassol, CYPRUS

Appointment: Department of Mechanical Engineering and Materials Science and Engineering

Assistant Professor

January 2011 - May 2020

Cyprus University of Technology, Limassol, CYPRUS

Appointment: Department of Mechanical Engineering and Materials Science and Engineering

Assistant Professor

October 2008 – December 2010

Frederick University, Nicosia, CYPRUS

Appointment: Mechanical Engineering Department

Visiting Lecturer

October 2007 – August 2008

National Technical University of Athens, Athens, GREECE

Appointment: School of Naval Architecture & Marine Engineering

Appointment type: full-time

RESEARCH EMPLOYMENT

Postdoctoral Researcher

October 2005 – June 2007

GRASP Laboratory, Mechanical Engineering Department, *University of Pennsylvania*, Philadelphia, PA.

Research supervisor: Professor **Vijay Kumar**

- Lead the algorithmic integration of the SWARMS project that was funded from ARO-MURI and was coordinated by the University of Pennsylvania.
- Collaborated closely with the SWARMS research groups of UC Berkeley, MIT, Yale and UCSB.
- Developed and realized on real robots, analytic techniques and bio-inspired algorithms for navigation, coordination and control of swarms of heterogeneous autonomous vehicles.

- Proposed the architecture for simulating decentralized SWARMS algorithms and developed a simulation tool in MATLAB.
- Conducted research with Professors **Daniel Koditschek**, **George Pappas** and **Ali Jadbabaie** and their research groups.
- Co-supervised starting doctoral students.
- Co-instructed and co-developed a graduate course on robotics.
- Participated in the preparation of a successful project proposal to ARL related to Autonomous Multifunctional Mobile Microsystems, which was funded with \$ 22 million.

Graduate Student Researcher

March 2002 – September 2005

Control Systems Laboratory, Mechanical Engineering Department, *National Technical University of Athens*, Athens, GREECE

Research supervisor: Professor **Kostas Kyriakopoulos**

- Established a new framework for multi-robot navigation.
- Developed feedback based motion planning methodologies for robots with holonomic and nonholonomic constraints, that are kinematically and dynamically described as well as for special classes of stick-slip actuated micro robots.
- Successfully applied the developed framework and methodologies to the MiCRoN platform of micro-robotic agents (under the EU sponsored MiCRoN project).
- Developed methodologies for automated motion task planning based on spatiotemporal task specifications.

Visiting Researcher

September 2004 – December 2004

Coordinated Science Laboratory, *University of Illinois at Urbana-Champaign*, Urbana, IL

Research supervisor: Professor **Christoforos Hadjicostis**

- Conducted research on applications of navigation functions to power networks.
- Proposed methodologies for critical regions avoidance in decentralized large scale networks.

Visiting Researcher

September 2002 – December 2002

GRASP Laboratory, CIS Department, *University of Pennsylvania*, Philadelphia, PA

Research supervisor: Professor **George J. Pappas**

- Conducted research on spatiotemporal task definition languages.
- Developed analytic methodologies for motion planning in uncertain environments and motion planning in dynamic environments in collaboration with Prof. Vijay Kymar and Post Doctoral Researcher Herbert Tanner.

Graduate Student Researcher

January 2001 – January 2002

Control Systems Laboratory, Mechanical Engineering Department, *National Technical University of Athens*, Athens, GREECE

Research supervisor: Professor **Kostas Kyriakopoulos**

- Researched and implemented multi-sensor data fusion algorithms for estimation of pipe & cable positions for autonomous underwater inspections under the EU sponsored AUTOTRACKER contract (G3RD-CT-2000-00265).

MILITARY SERVICE

Cyprus National Guard

June 1993 - September 1995

- Completed Military Services with the grade of second lieutenant at Signal Corps

HONORS & AWARDS

- 2017-19 : CUT H2020 Credits Award for involvement in H2020 proposals: Grant: €9700.
- 2016 : CUT H2020 Credits Award. Ranked 4th University-wide, Grant: €6000.
- 2015 : IEEE Transactions on Robotics (T-RO) Outstanding Reviewer
- 2000 – 2003 : Thomaidion award for Scientific Publications
- 2000 : Eugenides Foundation Scholarship for graduate studies
- 1995 – 2000 : National Scholarships Foundation of Greece: Full Scholarship
- 1995 – 1996 : Christos Papakyriakopoulou award for high performance in Mathematics (NTUA)
- 1995 - 1996 : National Scholarships Foundation award for high gradation (NTUA)
- 1993 : Ranked 1st in the National University Admission Exams for the NTUA M.E. School
- 1993 : Laudation for the Cyprus Mathematical Society contest
- 1992 – 1993 : Ethnomartyras Kyprianos Lyceum award for the highest gradation in Physics
- 1992 : Laudation for the Pan Cyprian Olympiad of Physics and Chemistry
- 1992 : Distinction in Chemistry - Olympiad of Physics and Chemistry
- 1992 : Distinction in the Pan Cyprian Olympiad of Informatics
- 1992 : Special distinction in Informatics award, Ethnomartyras Kyprianos Lyceum
- 1991 : **First award** in the 5th Pan Cyprian Physics Olympiad
- 1991 : Special distinction in Physics award, Ethnomartyras Kyprianos Lyceum
- 1990 : Laudation for the Cyprus Mathematical Society contest

PUBLICATIONS

BOOK CHAPTERS (Refereed)

- B3. S.G. Loizou and K.J. Kyriakopoulos “Multirobot Navigation Functions I”, in H.A.P Blom and J. Lygeros (eds.) **Stochastic Hybrid Systems: Theory and Safety Critical Applications**, Chapter 10, Springer, 2006
- B2. D.V. Dimarogonas, S.G. Loizou and K.J. Kyriakopoulos “Multirobot Navigation Functions II: Towards Decentralization”, in H.A.P Blom and J. Lygeros (eds.) **Stochastic Hybrid Systems: Theory and Safety Critical Applications**, Chapter 11, Springer, 2006
- B1. K.J. Kyriakopoulos and S.G. Loizou “Robotics: Fundamentals and Prospects” in Axel Munack (ed), **CIGR Handbook of Agricultural Engineering** Volume 6: Information Technology, Part I, Chap. 2.4, ASABE, 2006

JOURNAL ARTICLES

- J8. S.G. Loizou, “The Navigation Transformation”, **IEEE Transactions on Robotics**, vol.33, no. 6, pp. 1516-1523, doi:10.1109/TRO.2017.2725323, Dec 2017
- J7. G. Karras, S.G. Loizou and K.J. Kyriakopoulos, ”Towards Semi-Autonomous Operation of Under-Actuated Underwater Vehicles: Sensor Fusion, On-Line Identification and Visual Servo Control”, **Autonomous Robots** Volume 31, Issue 1, pp. 67-86, Springer 2011
- J6. X. Papageorgiou, H.G. Tanner, S.G. Loizou and K.J. Kyriakopoulos, “Switching Manipulator Control for Motion on Constrained Surfaces”, , **Journal of Intelligent and Robotic Systems**, doi: 10.1007/s10846-010-9447-2, Springer, 2011
- J5. S.G. Loizou and A. Jadbabaie “Density Functions for Navigation Function Based Systems”, **IEEE Transactions on Automatic Control**, vol. 53 (2), pp. 612-617, March 2008
- J4. S.G. Loizou and K.J. Kyriakopoulos “Navigation of Multiple Kinematically Constrained Robots”, **IEEE Transactions on Robotics**, vol. 24 (1), pp. 221-231, Feb. 2008
- J3. S.G. Loizou and K.J. Kyriakopoulos “A feedback Based Multiagent Navigation Framework” , **International Journal of Systems Science**, vol. 37 (6), pp. 377-384, May 2006

- J2. D.V. Dimarogonas, S.G. Loizou, K.J. Kyriakopoulos and M.M. Zavlanos “A Feedback Stabilization and Collision Avoidance Scheme for Multiple Independent Non-point Agents”, **Automatica**, vol. 42(2), pp. 229-243, Feb. 2006
- J1. H. Tanner, S.G. Loizou and K.J. Kyriakopoulos “Nonholonomic Navigation and Control of Cooperating Mobile Manipulators”, **IEEE Transactions on Robotics and Automation**, vol. 19(1), pp. 53-64, Feb. 2003

JOURNAL ARTICLES (under submission/revision)

- P2. S.G. Loizou, D.G. Lui, A. Petrillo, and S. Santini, ”Connectivity Preserving Formation Stabilization in an obstacle-cluttered environment in the presence of time-varying communication delays”, *IEEE Transactions on Automatic Control*, (under review)
- P1. C.C. Constantinou, G. Georgiades, S. G. Loizou, “A Laser Vision System for Relative 3-D Posture Estimation of an Underwater Vehicle with Hemispherical Optics”, (under revision), *IEEE Journal of Oceanic Engineering*

REFEREED CONFERENCE PUBLICATIONS

- C46. N. Constantinou, S.G. Loizou, ”Robot navigation on star worlds using a single-step Navigation Transformation”, (**under review**) *IEEE Conference on Decision and Control*, 2020
- C45. A. Tziola, S.G. Loizou, ”Automatic Task Planning for Heterogeneous Multi-Agent Systems”, (**under review**) *IEEE Conference on Decision and Control*, 2020
- C44. G. Georgiades, X. Papageorgiou, S.G. Loizou, “Integrated Forest Monitoring System for Early Fire Detection and Assessment”, 6th International Conference on Control, Decision and Information Technologies (CoDIT), Paris, FRANCE, April 23-26, 2019
- C43. C.C. Constantinou and S.G. Loizou, “Automatic Controller Synthesis of Motion-Tasks with Real-Time Objectives”, 57th IEEE Conference on Decision and Control (CDC), Fontainebleau, Miami Beach, FL, USA, December 17-19, 2018
- C42. S.G. Loizou, “Avoiding Sets of Measure-Zero in Navigation Transformation based Controllers”, Proceedings of the 27th International Conference of Robotics in Alpe Adria Danube Region (RAAD), Advances in Service and Industrial Robotics (Springer), pp. 512-520, Patras, GREECE, June 6-8, 2018
- C41. S.G. Loizou and C.C. Constantinou, “Multi-Robot Coverage on Dendritic Topologies Under Communication Constraint”, 55th IEEE Conference on Decision and Control (CDC), Las Vegas, USA, December 12-14, 2016.
- C40. C.C. Constantinou, G. Georgiades, and S.G. Loizou, “A Laser Vision System for Relative 3-D Posture Estimation of an Underwater Vehicle to Mesh-like Targets”, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Daejeon, Korea, October 9-14, 2016.
- C39. S. Potyagaylo, C.C. Constantinou, and S.G. Loizou, “Visual-Inertial Autonomous Navigation of an Underwater Vehicle for Aquaculture Inspection Operation”, (single page abstract), The 5th Israeli Conference on Robotics (ICR 2016), Airforce Center, Herzliya, ISRAEL, April 13-14, 2016.
- C38. S. Potyagaylo, C.C. Constantinou, G. Georgiades and S.G. Loizou, “Asynchronous UKF-based Localization of an Underwater Robotic Vehicle for Aquaculture Inspection Operations”, *OCEANS 2015 Conference*, Washington DC, USA, October 2015.
- C37. C. Constantinou, S.G. Loizou, G. Georgiades, S. Potyagaylo and D. Skarlatos, “Adaptive calibration of an underwater robot vision system based on hemispherical optics”, *Autonomous Underwater Vehicles 2014*, Oceanic Engineering Society – *IEEE AUV 2014*, Oxford, USA, October 6-9, 2014.
- C36. S.G. Loizou, “The Multi-Agent Navigation Transformation: Tuning-Free Multi-Robot Navigation”, 2014 Robotics: Science and Systems Conference (RSS), University of California, Berkeley, USA, July 12-16, 2014.

- C35. S. Potyagaylo and S.G. Loizou, "Online Adaptive Geometry Predictor of Aquaculture Fish-Nets", 22nd Mediterranean Conference on Control & Automation (MED), Palermo, Italy, June 16-19, 2014.
- C34. S.G. Loizou, "Navigation Functions in Topologically Complex 3-D Workspaces", American Control Conference, 2012
- C33. S.G. Loizou, "Closed Form Navigation Functions Based on Harmonic Potentials", 50th IEEE Conference on Decision and Control and European Control Conference, 2011
- C32. S.G. Loizou, "The Navigation Transformation: Point Worlds, Time Abstractions and Towards Tuning-Free Navigation", 19th Mediterranean Conference on Control and Automation, 2011
- C31. G. Karras, S.G. Loizou and K.J. Kyriakopoulos, "On-line State and Parameter Estimation of an Under-actuated Underwater Vehicle using a Modified Dual Unscented Kalman Filter", IEEE/RSJ International Conference on Intelligent Robots and Systems, 2010
- C30. A. Oikonomopoulos, S.G. Loizou and K.J. Kyriakopoulos, "Modeling and Control of Heterogeneous Non-Holonomic Input-Constrained Multiagent Systems", 49th IEEE Conference on Decision and Control, 2010.
- C29. G. Karras, S.G. Loizou and K.J. Kyriakopoulos, "A Visual-Servoing Scheme for Semi-Autonomous Operation of an Underwater Robotic Vehicle Using an IMU and a Laser Vision System," 2010 IEEE International Conference on Robotics and Automation
- C28. G. Karras, S.G. Loizou and K.J. Kyriakopoulos, "Semi-Autonomous Teleoperation of a Non-Holonomic Underwater Vehicle Using a Laser Vision System: A Visual-Servoing Switching Control Approach", 17th Mediterranean Conference on Control & Automation, 2009
- C27. A. Oikonomopoulos, S.G. Loizou and K.J. Kyriakopoulos, "Coordination of Multiple Non-Holonomic Agents with Input Constraints", 2009 IEEE International Conference on Robotics and Automation
- C26. A. Oikonomopoulos, S.G. Loizou and K.J. Kyriakopoulos, "Hybrid Control of a Constrained Velocity Unicycle with Local Sensing", 47th IEEE International Conference on Decision and Control, 2008
- C25. D. Chatzigeorgiou, S.G. Loizou and K.J. Kyriakopoulos, "R-Cell: A Module for a Self-Reconfigurable Robotic System", IEEE/RSJ 2008 International Conference on Intelligent Robots and Systems
- C24. N. Michael, J. Fink, S.G. Loizou, V. Kumar, "Architecture, Abstractions, and Algorithms for Controlling Large Teams of Robots: Experimental Testbed and Results", 13th International Symposium of Robotics Research (ISRR2007).
- C23. S.G. Loizou, V. Kumar, "Biologically Inspired Bearing-Only Navigation and Tracking", 46th IEEE Conference on Decision and Control, New Orleans, 2007
- C22. S.G. Loizou, V. Kumar, "Mixed Initiative Control of Autonomous Vehicles", 2007 IEEE International Conference on Robotics and Automation
- C21. M.A. Hsieh, S.G. Loizou, V. Kumar, "Stabilization of Multiple Robots on Stable Orbits via Local Sensing", 2007 IEEE International Conference on Robotics and Automation
- C20. X. Papageorgiou, S.G. Loizou, K.J. Kyriakopoulos, "Motion Tasks and Force Control for Robot Manipulators on Embedded 2D Manifolds", 2007 IEEE International Conference on Robotics and Automation
- C19. S.G. Loizou, A. Jadbabaie, "Density Functions for Navigation Function Based Systems," 45th IEEE Conference on Decision and Control, San Diego, California, USA, December 2006
- C18. S.G. Loizou, V. Kumar, "Weak Input-to-State Stability Properties for Navigation Function Based Controllers," 45th IEEE Conference on Decision and Control, San Diego, California, USA, December 2006
- C17. G. E. Fainekos, S.G. Loizou, G.J. Pappas, "Translating temporal logic to controller specifications," 45th IEEE Conference on Decision and Control, San Diego, California, USA, December 2006
- C16. P. Vartholomeos, S.G. Loizou, M. Thiel, K. J. Kyriakopoulos, E. Papadopoulos "Control of the Multi Agent Micro-Robotic Platform MiCRoN, " IEEE 2006 International Conference on Control Applications, Munich, Germany, October 2006

- C15. X. Papageorgiou, S.G. Loizou, K.J. Kyriakopoulos, “Motion Tasks for Robot Manipulators on Embedded 2-D Manifolds”, IEEE 2006 International Symposium on Intelligent Control, Munich, Germany, October 2006
- C14. S.G. Loizou and K.J. Kyriakopoulos “Automated Planning of Motion Tasks for Multi-Robot Systems,”, 44th IEEE Conference on Decision and Control 2005
- C13. S.G. Loizou and K.J. Kyriakopoulos ”Navigation of multiple input constraint micro-robotic agents”, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2005
- C12. S.G. Loizou and K.J. Kyriakopoulos “Motion Planning of Piezoelectrically Driven Micro-Robots via Navigation Functions, 13th IEEE Mediterranean Conference on Control and Automation 2005
- C11. X. Papageorgiou and S.G. Loizou and K.J. Kyriakopoulos “Motion Planning and Trajectory Tracking on 2-D Manifolds embedded in 3-D Workspaces”, IEEE 2005 Int. Conference on Robotics and Automation
- C10. S.G. Loizou and K.J. Kyriakopoulos “Automatic Synthesis of Multi-Agent Motion Tasks Based on LTL Specifications,” 43rd IEEE Conference on Decision and Control 2004
- C9. S.G. Loizou, K.J. Kyriakopoulos, “Centralized Feedback Stabilization of Multiple Nonholonomic Agents under Input Constraints,” 5th IFAC Symposium on Intelligent Autonomous Vehicles, IAV 2004
- C8. S.G. Loizou, D.V. Dimarogonas, K.J. Kyriakopoulos, “Decentralized Feedback Stabilization of Multiple Nonholonomic Agents,” Int. Conf. On Robotics and Automation 2004
- C7. S.G. Loizou H.G. Tanner, V. Kumar, K.J. Kyriakopoulos “Closed loop navigation for mobile agents in dynamic environments”, IEEE/RSJ International Conference on Intelligent Robots and Systems, 2003
- C6. S.G. Loizou H.G. Tanner, V. Kumar, K.J. Kyriakopoulos “Closed Loop Motion Planning and Control for Mobile Robots in Uncertain Environments”, 42nd IEEE Conference on Decision and Control, 2003
- C5. D. V. Dimarogonas, M.M. Zavlanos, S. G. Loizou and K. J. Kyriakopoulos “Decentralized Motion Control of Multiple Holonomic Agents under Input Constraints”, 42nd IEEE Conference on Decision and Control, 2003
- C4. S.G. Loizou and K.J. Kyriakopoulos “Closed Loop Navigation for Multiple Non-Holonomic Vehicles”, Proceedings of the 2003 Int. Conf. On Robotics and Automation
- C3. S.G. Loizou and K.J. Kyriakopoulos “Closed Loop Navigation for Multiple Holonomic Vehicles”, Proceedings of the 2002 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems.
- C2. H. Tanner, S.G. Loizou and K.J. Kyriakopoulos “Non-Holonomic Stabilization with Collision Avoidance for Mobile Robots”, Proceedings of the 2001 IEEE/RSJ Int. Conf. on Intelligent Robots and Systems.
- C1. H. G. Tanner, S. G. Loizou, K. J. Kyriakopoulos and N. Sigrimis, “Coordinating the Motion of a Manipulator and a Mobile Base in Tree Environments,” in Proceedings of the 2nd IFAC/CIGR International Workshop on Bio-Robotics, Information Technology and Intelligent Control for Bioproduction Systems, November 2000, Osaka, Japan

WORKSHOP PARTICIPATION

- W8. S. Potyagaylo and S.G. Loizou, “Towards Visual-Inertial Navigation of an Underwater Vehicle for Aquaculture Inspection Operation”, Women in Robotics II Workshop, Robotics: Science and Systems Conference 2015 (RSS), Rome, Italy, July 2015.
- W7. S. Potyagaylo and S.G. Loizou, “Online Aquaculture Flow Field Estimator for Control of Local Underwater Robotic Operations”, Persistent Autonomy for Aquatic Robotics: The Role of Control and Learning in Single and Multi-Robot Systems (PAAR) Workshop, International Conference on Robotics and Automaton (ICRA), Seattle, USA, May 2015.
- W6. M.Y. Hsieh, S.G. Loizou, “Stabilization of Multiple Robots on Stable Orbits via Local Sensing.” 2nd Workshop on Swarming in Natural and Engineered Systems, May 2007, Philadelphia, PA (Talk)
- W5. S.G. Loizou, “Biologically Inspired Landmark Based Navigation.” 2nd Workshop on Swarming in Natural and Engineered Systems, May 2007, Philadelphia, PA (Poster)

- W4. S.G. Loizou, “Biologically Inspired Landmark Based Navigation.” 3rd Northeast Control Workshop, May 2007, Philadelphia, PA (Talk)
- W3. S.G. Loizou, “Biologically Inspired Landmark Based Navigation.” IEEE 2007 Int. Conference on Robotics and Automation, Workshop on Collective Behaviors inspired by Biological and Biochemical Systems (Talk)
- W2. S.G. Loizou and Vijay Kumar, “Human-Robot Augmentation with Applications to Assistive Technology.” Robotics: Science and Systems Conference, Philadelphia PA, August 2006 (Talk)
- W1. S.G. Loizou and K.J. Kyriakopoulos, “Navigation of Multiple Input Constraint Micro-Robotic Agents,” IEEE 2005 Int. Conference on Robotics and Automation Workshop on Cooperative Robotics, Barcelona, Spain (Talk + Paper)

TECHNICAL REPORTS

- T3. Dimos V. Dimarogonas, Savvas G. Loizou, Kostas J. Kyriakopoulos and Michael M. Zavlanos, “Decentralized Feedback Stabilization and Collision Avoidance of Multiple Agents”, Technical Report 04-01
- T2. Savvas G. Loizou and K. J. Kyriakopoulos, “Closed Loop Navigation for Multiple Holonomic Vehicles,” Tecnical Report No. 01-02, Control Systems Lab. M.E. Dept, NTUA, 2002
- T1. Savvas G. Loizou and K. J. Kyriakopoulos, “Closed Loop Navigation for Multiple Non-Holonomic Vehicles,” Technical Report No. 02-02, Control Systems Lab. M.E. Dept, NTUA, 2002

CITATION OVERVIEW

- **Scopus Metrics:** Total Citations: **1173**. *h*-index : **17**
- **Google Scholar Metrics:** Total Citations: **2041**. *h*-index : **21**
- ORCID: 0000-0003-4083-9946

TEACHING EXPERIENCE

- **Mecahnical System Dynamics**, Cyprus University of Technology Fall'14 onwards
Mechanical Engineering Dept.: Undergraduate course
- **Robotics**, Cyprus University of Technology Spring'13
Mechanical Engineering Dept.: Graduate course
- **Mechatronics**, Cyprus University of Technology Fall'11 onwards
Mechanical Engineering Dept.: Undergraduate course
- **Automatic Control I**, Cyprus University of Technology Spring'11 onwards
Mechanical Engineering Dept.: Undergraduate course
- **Mechatronics** , Frederick University Spring '10
Mechanical Engineering Dept.: Undergraduate course
- **Production Systems and Automation** , Frederick University Spring '10
MSc in Engineering Management: Graduate course
- **Automation & Control Systems** , Frederick University Spring '09 & '10
Mechanical Engineering Dept.: Undergraduate course
- **Dynamics with Lab**, Frederick University Fall '08 & Spring '09
Mechanical Engineering Dept.: Undergraduate course
- **Engineering Vibrations & Machine Dynamics**, Frederick University Fall '08 & '09
Mechanical Engineering Dept.: Undergraduate course
- **Kinematics of Mechanisms**, Frederick University Fall '08 & '09
Mechanical Engineering Dept.: Undergraduate course

- **Marine Control Systems: Guidance Navigation and Control**, NTUA School of Naval Architecture and Marine Engineering: Undergraduate course Spring '08
- **Introduction to Automatic Control Systems**, NTUA School of Naval Architecture and Marine Engineering: Undergraduate course Fall '07
- **Robotics and Motion Planning**, University of Pennsylvania School of Engineering and Applied Science/GRASP Laboratory, Graduate course. Co-instructor and co-developer of the course. Spring '06 & '07
- **Micro-Systems Technology**, NTUA School of Mechanical Engineering, Graduate course: Teaching assistant Spring '04
- **Adaptive Control**, NTUA School of Mechanical Engineering, Graduate course: Teaching assistant Spring '03

INVITED TALKS

- IT9. "An Autonomous Underwater Robotic Visual Inspection System for Cyprus' Offshore Aquaculture Industry", **The Cyprus Institute**, Workshop on development and optimization of sustainable aquaculture systems in the Eastern Mediterranean and Middle East regions, November 2019
- IT8. "Motion Task Planning for Networked Robots" **Cyprus University of Technology**, Department of Mechanical Engineering and Materials Science and Engineering, November 2009:
- IT7. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", **University of Cyprus**, Nicosia, Cyprus, July 2008
- IT6. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", **Technische Universität München**, Munich, Germany, July 2008:
- IT5. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", **Virginia Tech**, ME Dept., Blacksburg VA, May 2008:
- IT4. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", **Institute of Advanced Learning and Research**, Danville VA., May 2008:
- IT3. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", **Royal Institute of Technology (KTH)**, EE Dept., Stockholm, Sweden, Feb. 2008
- IT2. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", Mechanical Engineering Dept., **University of New Mexico**, Albuquerque NM, May 2007
- IT1. "Compositional Controllers for Networked Robots: Enabling Mixed Initiative Control", College of Engineering, **Drexel University**, Philadelphia PA, January 2007:

RESEARCH GROUP

Current Members

Phd Students

1. Nicolas Constantinou, Projects: RIMA, HOD-ICCCS, RETuNE. 2018 – present.
2. Anatoli Tziola, Projects: L4MS. 2019 – present.

Post-Doctoral Researchers

1. Dr. ir Andreas Prodromou, Entrepreneur-in-Residence, Projects: L4MS, RIMA (2017 – present)
2. Dr. George Georgiades, Systems Integrator, Projects: NEORBOT, AQUABOT, SFEDA, RIMA, L4MS (2012 – present)

Diploma Thesis Students

1. Andreas Kyriakou, Diploma Thesis, 2019 – 2020
2. Patroklos Pantela, Diploma Thesis, 2019 – 2020
3. Theodoulos Kapnisis, Diploma Thesis, 2019 – 2020

Alumni

Phd Students

1. Christos Constantinou, Ph.D (2019)
Current Position: Post Doctoral Research Associate at KTH - Sweden
Thesis title: Automated Planning, Sensing and Control for Autonomous Underwater Robotic Systems

Post-Doctoral Associates

1. Dr. Svetlana Potyagaylo, Projects: AQUABOT, 2013–2015.
Currently: Research Associate at Technion Israel Institute of Technology
2. Dr. Constantinos Mihail, 2012–2013.
Last known affiliation: SignalGenerix Ltd.
3. Kyriakos Deliparaschos, 2012–2015.
Last known affiliation: Special Teaching Staff, Cyprus University of Technology.

Graduate Alumni

1. Panayiota Hadjicosti, Research Assistant. Projects: NEROBOT, 2011–2012.
Last known affiliation: K.U. Leuven, Graduate student
2. Stathis Efstathiou, MSc (2010)
Thesis title: Navigation of a non-holonomic vehicle in dynamic environments
Last known affiliation: Laboratory Teaching staff, Frederick University
3. Loizos Loizou, MSc (2010)
Thesis title: Stabilization and Tracking of an underwater robotic vehicle
Last known affiliation: Laboratory Teaching staff, Frederick University
4. Savvas Savva, MSc (2010)
Thesis title: Surveillance of obstacle cluttered environments
Last known affiliation: Laboratory Teaching staff, Frederick University

Visiting Graduate Researchers

1. Dario Giuseppe Lui, (Ph.D candidate, University of Sannio, Italy) 2019
2. Ioannis Mathhaiou, (Ph.D candidate, University of Sheffield, UK) 2017 – 2018

Undergraduate Alumni

1. Andreas Vorkas, Diploma Thesis, 2018 – 2019
2. Constantinos Pavlou, Diploma Thesis, 2018 – 2019
3. Constantinos Odysseos, Diploma Thesis, 2018 – 2019
4. Yiannis Ioannou, Diploma Thesis, 2018 – 2019
5. Yiannakis Kompos, Diploma Thesis, 2018 – 2019
6. Panayiotis Kampouridis, Diploma Thesis, 2018 – 2019
7. Michalis Pavlou, Diploma Thesis, 2017 – 2019
8. Christodoulos Demetriou, Diploma Thesis, 2017 – 2019
9. Xenios Andreou, Diploma Thesis, 2017 – 2018
10. Vasilis Petrou, Diploma Thesis,, 2017 – 2018

11. Modestos Koullapis, Diploma Thesis, 2017 – 2018
12. Neophytos Katsiflis, Diploma Thesis, 2016 –2017
13. Ifigenia Asladnidou, Diploma Thesis, 2015 – 2016
14. Simos Michael, Diploma Thesis, 2015 – 2016
15. George Psaras, Diploma Thesis, 2014 – 2016
16. Karl Credeville (co-supervised Erasmus student), Diploma Thesis, 2015
17. Neofytos Meraklis, Diploma Thesis, 2014–2015
18. Argyris Theofanous, Diploma Thesis, 2014–2015
19. Marios Voskaris, Diploma Thesis, 2013–2014
20. Fatma al Nagar, Diploma Thesis, 2012–2013
21. George Kakoullis, Diploma Thesis, 2011–2012

ESTABLISHMENT OF EXPERIMENTAL ROBOTIC RESEARCH FACILITIES

Dr. Loizou established the **Robotics Control and Decision Systems (RCDS) Laboratory** in 2011 at the Cyprus University of Technology with approx. 200 m^2 total Lab space split between the Ttofis and Sykopetritis buildings. The RCDS Lab focuses in research and development of systems that sense, perceive and act autonomously. RCDS utilizes open-source software (and whenever possible open-source hardware) for all of its operations. RCDS is the first Robotics research laboratory in Cyprus. The established facilities include:

- **Underwater robotics infrastructure:** Two ROVs and a $3 \times 5 \times 1m^3$ water tank. Custom communication, control and localization software and hardware developed in-house. A water-tank overhead custom Gantry-like x - y - δ robot was designed and build in-house.
- **Aerial Robotics infrastructure:** Four quadrotors and a $5 \times 5 \times 2.80m^3$ flight test facility. Custom communication, control and localization software and hardware developed in-house.
- **Mobile Robotics infrastructure:** Five mobile robots and a $15 \times 5m^2$ test facility. Custom communication, control and localization software and hardware developed in-house.

The RCDS has evolved into an EU recognized Competence Center (CC) in Robotics with particular focus on manufacturing systems logistics through the H2020 L4MS project (part of the EU I4MS initiative). Additionally, the RCDS is an EU recognized “Digital Innovation Hub in preparation” (DIH), focused on inspection and maintenance, part of the RIMA DIH network. In a nutshell a CC and a DIH provide a 360° coverage of all research, technology development and innovation support activities focusing on the European Industry. Through its recognition as a CC and DIH, RCDS is expanding its academic and industrial network to encompass all of the EU and beyond.

UNIVERSITY ACTIVITIES

Committees/Posts

1. Departmental committee for Graduate Studies, Coordinator, 2018–present
2. Departmental committee for Research, member, 2015–present
3. Departmental committee for Quality assurance of administrative services, member, 2015–2017
4. Departmental committee for Undergraduate Program Improvement, member, 2011–2017
5. Departmental committee for Connection with industry , member, 2011–2017
6. Departmental committee for Research, Coordinator, 2011–2014

7. Departmental committee for Engineering Laboratories, member, 2011–2017
8. Departmental committee for Graduate Studies, member, 2011–2017
9. School of Engineering and Technology Council member, 2012–2013
10. ERASMUS coordinator for the Mechanical Engineering Department, 2008 – 2010.
11. Member of the Mechanical Engineering Program of Study Restructuring Committee, 2008 – 2010.

Course Development Activities

1. Restructured the syllabus for Mechanical System Dynamics, undergraduate course (Cyprus University of Technology)
2. Restructured the syllabus for Mechatronics, undergraduate course (Cyprus University of Technology)
3. Developed the syllabus for Robotics, graduate level course (Cyprus University of Technology)
4. Proposed and developed the syllabus for the course Hybrid Systems, graduate level course of the Electrical Engineering MSc program (Frederick University).
5. Contributed to the development of the syllabus of the course Nonlinear and Adaptive Control, graduate level course of the Electrical Engineering MSc program (Frederick University).
6. Developed the syllabus for the Mechatronics course, undergraduate level course for the Mechanical Engineering Department (Frederick University).
7. Developed the syllabus for the Automotive Mechatronics course, undergraduate level course for the Mechanical Engineering Department (Frederick University).

PROFESSIONAL ACTIVITIES

Journal Activities

- Associate Editor, *Frontiers in Robotics and AI: Multi-Robot Systems*. 2014 – onwards

Conference Activities

2019

- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Philadelphia, PA, USA, July 10-12, 2019

2018

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the Mediterranean Conference on Control and Automation (MED), Zadar, Croatia, June 19-22, 2018
- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the Conference on Automation Science and Engineering (CASE), Munich, Germany, August 20-24, 2018
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Milwaukee, WI, USA, June 27-29, 2018
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Fontainebleau, Miami Beach, FL, USA, December 17-19, 2018

2017

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the Conference on Automation Science and Engineering (CASE), Xi'an, China, August 20-23, 2017
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Melbourne, Australia, December 12-15, 2017

- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Seattle, WA, USA, May 24-26, 2017

2016

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA), Stockholm, Sweden, May 16-21, 2016
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Boston, MA, USA, July 6-8, 2016
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Las Vegas, NV, USA, December 12-14, 2016

2015

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA), Seattle, WA, USA, May 26-30, 2015
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Chicago, IL, USA, July 1-3, 2015
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Osaka, Japan, December 15-18, 2015
- International Program Committee member, Mediterranean Conference on Control and Automation (MED), Torremolinos, Spain, July 16-19, 2015

2014

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA), Hong Kong, China, May 31-June 7, 2014
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Portland OR, USA, June 4-6, 2014
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Los Angeles, CA, USA, December 15-17, 2014

2013

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA) 2013, Karlsruhe, Germany, May 6-10, 2013
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Washington, DC, USA, June 17-19, 2013
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Florence, Italy, December 10-13, 2013

2012

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA), St. Paul, MN-USA, May 14-18, 2012
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the American Control Conference (ACC), Montreal, Canada, June 27-29, 2012
- International Program Committee member, IEEE Symposium on Safety, Security and Rescue Robots (SSRR), Disaster City, Texas, USA, November 5-8, 2012
- Associate Editor, Conference Editorial Board for the IEEE Control Systems Society for the Conference on Decision and Control (CDC), Maui, Hawaii, December 10-13, 2012
- International Program Committee member, Mediterranean Conference on Control and Automation (MED), Barcelona, Spain, July 3-6, 2012

- International Program Committee member, International Conference on Informatics in Control, Automation and Robotics (ICINCO), Rome, Italy, July 28-31, 2012
- International Program Committee member, International Conference on Control, Automation, Robotics and Vision (ICARCV), Guangzhou, China, December 2012

2011

- Associate Editor, Conference Editorial Board for the IEEE Robotics and Automation Society for the International Conference on Robotics and Automation (ICRA), Shanghai, China, May 9-13, 2011
- Associate Editor, Conference Editorial Board for the IEEE International Conference on Intelligent Robots and Systems (IROS), San Francisco, CA, USA, September 25-30, 2011

2010

- International Program Committee member, International Symposium on Distributed Autonomous Robotics Systems (DARS), Lausanne, Switzerland, November 2010

Doctoral Committees

- Nicolas Manitaras, University of Cyprus, 2018.
- Demetris Stavrou, University of Cyprus, 2016.
- Theofanis Lambrou, University of Cyprus, 2011.

MSc Committees

- Constantinos Kouris, Cyprus University of Technology, 2018
- Elena Theodorou, Cyprus University of Technology, 2016
- Efthymios Georgiou, Cyprus University of Technology, 2013

Organizer

- The 2nd Annual Dual Use Marine Technologies Workshop (co-organized with Cyprus Subsea Consulting and MarInEM), October 2019
- First Annual Workshop on Dual Use Marine Technologies in Cyprus (co-organized with Cyprus Subsea Consulting and MarInEM), November 2018
- European Robotics Week event at Cyprus University of Technology, November 2017
- European Robotics Week event at Cyprus University of Technology, November 2015
- European Robotics Week event at Cyprus University of Technology, November 2014
- Co-organized (with Prof. Vijay Kumar) a workshop on *Collective Behaviors inspired by Biological and Biochemical Systems* at IEEE International Conference on Robotics and Automation (ICRA), Roma, Italy, April 2007.

Expert

- Expert evaluator for the EC Horizon H2020 FETOPEN 2019
- Expert evaluator for the EC Horizon 2020 Electronic Components and Systems for European Leadership ECSEL JU, 2018
- Expert evaluator for the EC Horizon H2020 FETOPEN 2018
- Expert evaluator for the 2018 HORSE-H2020-FoF open call
- Member of the International Academic and Industry Advisory Board of the Marine and Maritime Research, Innovation and Technology Centre of Excellence - MARITEC-X (H2020-WIDESPREAD-2016-2017)
- Expert evaluator for the EC Horizon H2020 FETOPEN 2017

- Expert evaluator for the Agency of Quality Assurance and Accreditation in Higher Education for the UCLAN Cyprus Professional Diploma in Automotive Engineering
- Member of the Scientific Committee of the ROBOTEX Cyprus Challenge, 2017 – present
- Expert for the final review of the ARTEMIS/ECSEL project R5-COP, 2017
- Expert evaluator for the EC Horizon 2020 Electronic Components and Systems for European Leadership ECSEL JU, 2017
- Expert evaluator for the EC Horizon 2020 Electronic Components and Systems for European Leadership ECSEL JU, 2016
- Expert evaluator for the EC Horizon 2020 Electronic Components and Systems for European Leadership ECSEL JU, 2015
- Expert judge for NASA SpaceApps Challenge, Limassol 2015
- Expert evaluator for the EC Horizon 2020, Factories of the Future, 2014
- Expert judge for NASA SpaceApps Challenge, Limassol 2013
- Expert evaluator for the EC Seventh Framework Programme, Factories of the Future, 2013
- European Defence Agency non-governmental expert for ESM1:Naval Systems & their Environment and GEM4: Guidance & Control (2012–2013)
- Research Group Proposal Evaluator, King Fahd University of Petroleum and Minerals, 2010

Consulting

- University of Cyprus, Oceanography Centre
- G.G. Dedalos Technology Services Ltd.
- Helikas Robotics Ltd.
- Engino.net Ltd.

Reviewer

- IEEE Transactions on Robotics
- IEEE Transactions on Automatic Control
- IEEE Transactions on Automation Science and Engineering
- Robotics and Autonomous Systems Journal
- Automatica
- IEEE Conference on Robotics and Automation
- IEEE Conference on Decision and Control
- American Control Conference
- IEEE Mediterranean Conference on Control and Automation
- Journal of Zhejiang University SCIENCE
- Arabian Journal for Science and Engineering
- IEEE Conference on Networking Sensing and Control
- IEEE Conference on Intelligent Robots and System
- IEEE Multi-conference on Systems and Control

Professional Memberships

- Delegate of Cyprus University of Technology to euRobotics AISBL
- Institute of Electrical and Electronics Engineers (IEEE)
 - Control Systems Society (IEEE-CSS)
 - Robotics and Automation Society (IEEE-RAS)
 - Oceanic Engineering Society (IEEE-OES)
- Technical Chamber of Greece (TEE)
- Scientific Technical Chamber of Cyprus (ETEK)

RESEARCH FUNDING

1. *Better Factory: Grow your manufacturing business*
H2020-DT-ICT-03-2020, €8.576.163,75 (CUT budget €133.750,00), 2020-2024
Role: Partner (CUT-PI: Dr. S.G. Loizou)
2. *RETuNE: Real-time Communications for the Practical Communication Networks*
Research Promotion Foundation, Excellence Hubs EXCELLENCE/1216/0296, €247.840,00, (CUT budget €20.112,00), 2019-2022
Role: Partner (CUT-PI: Dr. Savvas G. Loizou)
3. *HOD-ICCS: Hierarchical Organization and Decentralization in Information Communication and Control of Complex Dynamical Systems*
Research Promotion Foundation, Excellence Hubs EXCELLENCE/1216/0365, €249.984,00, (CUT budget €47.040,00), 2019-2022
Role: Partner (CUT-PI: Dr. Savvas G. Loizou)
4. *RIMA: Robotics for Infrastructure Inspection and MAintenance*
H2020-DT-2018-2020, €16.048.605,00 (CUT budget €266.437,00), 2019-2022
Role: Partner (CUT-PI: Dr. Savvas G. Loizou)
5. *RTURTLE: Turtle observation with robotic systems*
Oceanography Centre, University of Cyprus, €20.000,00, 2017-2020
Role: Coordinator
6. *L4MS: Logistics for Manufacturing SMEs*
H2020-FOF-12-2017, €7.996.772,50 (CUT: €360.660,00) 2017-2021
Role: Partner (CUT-PI: Dr. S.G. Loizou)
7. *SFEDA: Forest Monitoring System for Early Fire Detection and Assessment in the Balkan-Med Area*
(Interreg V-B) Balkan-Mediterranean, €1.428.366,51 (CUT:€275.473,79) 2017-2019
Role: Partner (CUT-PI: Dr. S.G. Loizou)
8. *ROBODILLOS: A Networked Mobile Robotic Platform for Shared Autonomy Sewer Inspection Operations*
FP7/ECHORD++ PDTI Urban Robotics Challenge, €67.435, 2016
Role: Coordinator
9. *AQUABOT: An Autonomous Underwater Robotic Visual Inspection System for Cyprus' Offshore Aquaculture Industry*
Research Promotion Foundation, DESMI 2009–2010, ΑΕΙΦΟΡΙΑ/ΓΕΩΡΓΟ/0311(BIE)/08, €158.511, 2013–2015
Role: Coordinator
10. *NEROBOT: Networked Robots and Robotic Systems for Underwater Operations*
Start-up grant, Cyprus University of Technology, €40.000, 2012–2013
Role: Coordinator
11. *A smart feed management data tool for Cyprus' offshore aquaculture industry with the aid of a stand-alone renewable energy system*

Research Promotion Foundation, DESMI 2009–2010, TEXNOLOGIA/MHXANIKH/0609(BIE),
€180.000, 2011–2013

Role: Partner. Dr. Loizou left the consortium after he was elected at Cyprus University of
Technology.