

# Iasson Karafyllis

## Curriculum Vitae

---

### Personal Data

**Name:** Iasson Karafyllis

**Date of Birth:** 14/9/1971

**Place of Birth:** Athens, Greece

**Family Status:** Married, two children

**Office Address:** Dept. of Mathematics, National Technical University of Athens  
Zografou Campus, 15780, Athens, Greece

**Office Telephone Number:** +30 210 772 4478

**Email:** [iasonkar@central.ntua.gr](mailto:iasonkar@central.ntua.gr)

**Personal Website:** <http://www.math.ntua.gr/~iasonkar>

---

### Teaching Experience

**February 2013 - now:** Assistant Professor in the Dept. of Mathematics, National Technical University of Athens.

**Courses:** Calculus for Engineers, Numerical Analysis for Engineers, Differential Equations for Engineers, Optimal Control for mathematicians, Mathematical Modeling for mathematicians, Dynamical Systems for mathematicians, Feedback Control Design for mathematicians, Nonlinear Control for mathematicians (graduate level).

**September 2006 – January 2013:** Assistant Professor in the Dept. of Environmental Engineering, Technical University of Crete.

**Courses:** Optimization Theory for Engineers, Mathematical Modeling, Automatic Control, Dynamical Systems in Mathematical Biology (graduate level), Numerical methods for PDEs (graduate level).

**September 2003 - July 2006:** Lecturer in the Dept. of Economics, University of Athens.

**Courses:** Calculus for Economists, Differential Equations for Economists, Dynamical Systems for Economists (graduate level).

**September 2003 - July 2006:** Lecturer in the Dept. of Mathematics, National Technical University of Athens.

**Course :** Nonlinear Control Theory (graduate level).

---

## Studies

**1998-2003:** Ph.D. in Mathematics, Dept. of Mathematics, National Technical University of Athens. Advisor: John Tsinias. Ph.D. Thesis: “Time-Varying Feedback and Non-uniform Stability”, Athens, Greece, 2003.

**1995-1997:** M.Sc. in Mathematics, Dept. of Mathematics, University of Minnesota.

**1994-1995:** M.Sc. in Process Integration, Dept. of Process Integration, University of Manchester Institute of Science and Technology (UMIST).

**1989-1994:** Diploma in Chemical Engineering, Dept. of Chemical Engineering, National Technical University of Athens.

---

## Research Data

**Research Monographs:** 2

**Edited Books:** 1

**Book Chapters:** 3

**Journal Papers:** 63

**Conference Papers:** 33

**Citations:** 823 (Scopus, 21/1/2015), 1575 (Google Scholar, 5/10/2015), 374 (MathSciNet, 21/1/2015), 488 excluding self-citations (Scopus, 21/1/2015).

**H-index:** 18 (Scopus, 21/1/2015), 24 (Google scholar, 5/10/2015), 12 excluding self-citations (Scopus, 21/1/2015).

Google Scholar Profile: <http://scholar.google.com/citations?user=qgTIJgUAAAAJ&hl=en>

---

## Additional Information

- Associate Editor for the *American Control Conference 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016* and for the *IEEE Conference on Decision and Control 2009, 2010, 2011, 2012, 2013, 2014, 2015*.
- Member of the Technical Program Committee of the *Chinese Control and Decision Conference 2011, 2012, 2013, 2014*.

- Member of the International Program Committee of the *European Control Conference 2015*.
- Associate Editor for the *International Journal of Control* (2013-now).
- Associate Editor for *IMA Journal of Mathematical Control and Information* (2013-now).
- Associate Editor for the *Journal of Control and Decision* (2015-now).
- Reviewer for the following journals: *Automatica*, *IEEE Transactions on Automatic Control*, *Mathematics of Control Signals and Systems*, *IMA Journal of Mathematical Control and Information*, *SIAM Journal on Control and Optimization*, *International Journal of Robust and Nonlinear Control*, *International Journal of Control*, *European Journal of Control*, *Systems and Control Letters*, *Journal of Difference Equations and Applications*.
- Reviewer for Mathematical Reviews (American Mathematical Society).

---

## Books

- B1. I. Karafyllis and Z.-P. Jiang, *Stability and Stabilization of Nonlinear Systems*, Springer-Verlag London (Series: Communications and Control Engineering), 2011.
- B2. I. Karafyllis and M. Krstic, *Predictor Feedback for Delay Systems : Implementations and Approximations*, to be published by Birkhäuser.

---

## Edited Books

- B3. *Recent Results on Nonlinear Time Delayed Systems*, Eds. M. Malisoff, P. Pepe, F. Mazenc and I. Karafyllis, *Advances in Delays and Dynamics (ADD@S)*, Springer, 2015.

---

## Book Chapters

- BC1. I. Karafyllis and P. Pepe, “A Note on Converse Lyapunov Results for Neutral Systems”, *Recent Results on Nonlinear Time Delayed Systems* (Eds. M. Malisoff, P. Pepe, F. Mazenc and I. Karafyllis), *Advances in Delays and Dynamics (ADD@S)*, Springer, 2015.
- BC2. T. Ahmed-Ali, I. Karafyllis, M. Krstic and F. Lamnabhi-Lagarrigue, “Robust Stabilization of Nonlinear Globally Lipschitz Delay Systems”, *Recent Results on Nonlinear Time Delayed Systems* (Eds. M. Malisoff, P. Pepe, F. Mazenc and I. Karafyllis), *Advances in Delays and Dynamics (ADD@S)*, Springer, 2015.
- BC3. I. Karafyllis, M. Malisoff, F. Mazenc, and P. Pepe, “Stabilization of Nonlinear Delay Systems: A Tutorial on Recent Results”, *Recent Results on Nonlinear Time Delayed Systems* (Eds. M. Malisoff, P. Pepe, F. Mazenc and I. Karafyllis), *Advances in Delays and Dynamics (ADD@S)*, Springer, 2015.

1. J. Tsinias and I. Karafyllis, "ISS Property for Time-Varying Systems and Application to Partial-State Feedback Stabilization and Asymptotic Tracking", *IEEE Transactions Automatic Control*, **44(11)**, 1999, pp. 2179-2185.
2. I. Karafyllis, "Non-Uniform Stabilization of Control Systems", *IMA Journal of Mathematical Control and Information*, **19(4)**, 2002, pp. 419-444.
3. I. Karafyllis, "Necessary and Sufficient Conditions for the Existence of Stabilizing Feedback for Control Systems", *IMA Journal of Mathematical Control and Information*, **20(1)**, 2003, pp. 37-64.
4. I. Karafyllis and J. Tsinias, "Global Stabilization and Asymptotic Tracking for a Class of Nonlinear Systems by Means of Time-Varying Feedback", *International Journal of Robust and Nonlinear Control*, **13(6)**, 2003, pp. 559-588.
5. I. Karafyllis and J. Tsinias, "A Converse Lyapunov Theorem for Non-Uniform in Time Global Asymptotic Stability and Stabilization by Means of Time-Varying Feedback", *SIAM Journal Control and Optimization*, **42(3)**, 2003, pp. 936-965.
6. I. Karafyllis and J. Tsinias, "Non-Uniform in Time Stabilization for Linear Systems and Tracking Control for Nonholonomic Systems in Chained Form", *International Journal of Control*, **76(15)**, 2003, pp. 1536-1546.
7. I. Karafyllis and J. Tsinias, "Non-Uniform in Time Input-to-State Stability and the Small-Gain Theorem", *IEEE Transactions Automatic Control*, **49(2)**, 2004, pp. 196-216.
8. I. Karafyllis, "The Non-Uniform in Time Small-Gain Theorem for a Wide Class of Control Systems with Outputs", *European Journal of Control*, **10(4)**, 2004, pp. 307-323.
9. I. Karafyllis, "Non-Uniform in Time Robust Global Asymptotic Output Stability", *Systems and Control Letters*, **54(3)**, 2005, pp. 181-193.
10. I. Karafyllis, "Applications of Non-Uniform in Time Robust Global Asymptotic Output Stability to Robust Partial State Feedback Stabilization", *Systems and Control Letters*, **54(10)**, 2005, pp. 939-951.
11. I. Karafyllis and C. Kravaris, "Robust Output Feedback Stabilization and Nonlinear Observer Design", *Systems and Control Letters*, **54(10)**, 2005, pp. 925-938.
12. I. Karafyllis, "Non-Uniform Robust Global Asymptotic Stability for Discrete-Time Systems and Applications to Numerical Analysis", *IMA Journal of Mathematical Control and Information*, **23(1)**, 2006, pp. 11-41.
13. I. Karafyllis, "Lyapunov Theorems for Systems Described by Retarded Functional Differential Equations", *Nonlinear Analysis: Theory, Methods and Applications*, **64(3)**, 2006, pp. 590-617.
14. I. Karafyllis, "Non-Uniform in Time Robust Global Asymptotic Output Stability for Discrete-Time Systems", *International Journal of Robust and Nonlinear Control*, **16(4)**, 2006, pp. 191-214.
15. I. Karafyllis, "Finite-Time Global Stabilization by Means of Time-Varying Distributed Delay Feedback", *SIAM Journal Control and Optimization*, **45(1)**, 2006, pp. 320-342.
16. I. Karafyllis, "Stabilization by Means of Time-Varying Hybrid Feedback", *Mathematics of Control, Signals and Systems*, **18(3)**, 2006, pp. 236-259.
17. I. Karafyllis and S. Kotsios, "Necessary and Sufficient Conditions for Robust Global Asymptotic Stabilization of Discrete-Time Systems", *Journal of Difference Equations and Applications*, **12(7)**, 2006, pp. 741-768.
18. I. Karafyllis and C. Kravaris, "On the Observer Problem for Discrete-Time Control Systems", *IEEE Transactions on Automatic Control*, **52(1)**, 2007, pp. 12-25.

19. I. Karafyllis, "A System-Theoretic Framework for a Wide Class of Systems I: Applications to Numerical Analysis", *Journal of Mathematical Analysis and Applications*, **328**(2), 2007, pp. 876-899.
20. I. Karafyllis, "A System-Theoretic Framework for a Wide Class of Systems II: Input-to-Output Stability", *Journal of Mathematical Analysis and Applications*, **328**(1), 2007, pp. 466-486.
21. I. Karafyllis and Z.-P. Jiang, "A Small-Gain Theorem for a Wide Class of Feedback Systems with Control Applications", *SIAM Journal Control and Optimization*, **46**(4), 2007, pp. 1483-1517.
22. I. Karafyllis, C. Kravaris, L. Syrou and G. Lyberatos, "A Vector Lyapunov Function Characterization of Input-to-State Stability with Application to Robust Global Stabilization of the Chemostat", *European Journal of Control*, **14**(1), 2008, pp. 47-61.
23. P. Pepe, I. Karafyllis and Z.-P. Jiang, "On the Liapunov-Krasovskii Methodology for the ISS of Systems described by Coupled Delay Differential and Difference Equations", *Automatica*, **44**(9), 2008, pp. 2266-2273.
24. I. Karafyllis and C. Kravaris, "Non-Uniform in Time State Estimation of Dynamical Systems", *Systems and Control Letters*, **57**(9), 2008, pp. 714-725.
25. I. Karafyllis, "Global Stabilization by Means of Discrete-Delay Static Output Feedback", *Systems and Control Letters*, **57**(12), 2008, pp. 987-995.
26. I. Karafyllis, P. Pepe and Z.-P. Jiang, "Global Output Stability for Systems Described by Retarded Functional Differential Equations: Lyapunov Characterizations", *European Journal of Control*, **14**(6), 2008, pp. 516-536.
27. I. Karafyllis, P. Pepe and Z.-P. Jiang, "Input-to-Output Stability for Systems Described by Retarded Functional Differential Equations", *European Journal of Control*, **14**(6), 2008, pp. 539-555.
28. G. Athanasiou, I. Karafyllis and S. Kotsios, "Price Stabilization Using Buffer Stocks", *Journal of Economic Dynamics and Control*, **32**(4), 2008, pp. 1212-1235.
29. I. Karafyllis and J. Tsinias, "Control Lyapunov Functions and Stabilization by Means of Continuous Time-Varying Feedback", *ESAIM Control, Optimisation and Calculus of Variations*, **15**(3), 2009, pp. 599-625.
30. I. Karafyllis and C. Kravaris, "Robust Global Stabilizability by Means of Sampled-Data Control with Positive Sampling Rate", *International Journal of Control*, **82**(4), 2009, pp. 755-772.
31. I. Karafyllis and C. Kravaris, "Global Stability Results for Systems under Sampled-Data Control", *International Journal of Robust and Nonlinear Control*, **19**(10), 2009, pp. 1105-1128.
32. I. Karafyllis, P. Pepe and Z.-P. Jiang, "Stability Results for Systems Described by Coupled Retarded Functional Differential Equations and Functional Difference Equations", *Nonlinear Analysis, Theory, Methods and Applications*, **71**(7-8), 2009, pp. 3339-3362.
33. I. Karafyllis, C. Kravaris and N. Kalogerakis, "Relaxed Lyapunov Criteria for Robust Global Stabilization of Nonlinear Systems", *International Journal of Control*, **82**(11), 2009, pp. 2077-2094.
34. I. Karafyllis and C. Kravaris, "From Continuous-Time Design to Sampled-Data Design of Observers", *IEEE Transactions on Automatic Control*, **54**(9), 2009, pp. 2169-2174.
35. I. Karafyllis and Z.-P. Jiang, "Stability and Control of Nonlinear Systems Described by Retarded Functional Equations: A Review of Recent Results", *Science in China Series F: Information Sciences*, **52**(11), 2009, pp. 2104-2126.
36. I. Karafyllis and Z.-P. Jiang, "Necessary and Sufficient Lyapunov-like Conditions for Robust Nonlinear Stabilization", *ESAIM Control, Optimisation and Calculus of Variations*, **16**(4), 2010, pp. 887-928.



37. I. Karafyllis, Z.-P. Jiang and G. Athanasiou, "Nash Equilibrium and Robust Stability in Dynamic Games: A Small-Gain Perspective", *Computers and Mathematics with Applications*, **60(11)**, 2010, pp. 2936-2952.
38. I. Karafyllis and L. Grüne, "Feedback Stabilization Methods for the Numerical Solution of Systems of Ordinary Differential Equations", *Discrete and Continuous Dynamical Systems: Series B*, **16(1)**, 2011, pp. 283-317.
39. I. Karafyllis and Z.-P. Jiang, "A Vector Small-Gain Theorem for General Nonlinear Control Systems", *IMA Journal of Mathematical Control and Information*, **28(3)**, 2011, pp. 309-344.
40. I. Karafyllis, "Stabilization By Means of Approximate Predictors for Systems with Delayed Input", *SIAM Journal on Control and Optimization*, **49(3)**, 2011, pp. 1100-1123.
41. I. Karafyllis and Z.-P. Jiang, "Hybrid Dead-Beat Observers for a Class of Nonlinear Systems", *Systems and Control Letters*, **60(8)**, 2011, pp. 608-617.
42. I. Karafyllis and M. Krstic, "Nonlinear Stabilization under Sampled and Delayed Measurements, and with Inputs Subject to Delay and Zero-Order Hold", *IEEE Transactions on Automatic Control*, **57(5)**, 2012, pp. 1141-1154.
43. I. Karafyllis and C. Kravaris, "Global Exponential Observers for Two Classes of Nonlinear Systems", *Systems and Control Letters*, **61(7)**, 2012, pp. 797-806.
44. I. Karafyllis and M. Krstic, "Global Stabilization of Feedforward Systems Under Perturbations in Sampling Schedule", *SIAM Journal on Control and Optimization*, **50(3)**, 2012, pp. 1389-1412.
45. I. Karafyllis, "Can We Prove Stability by Using A Positive Definite Function with Non Sign-Definite Derivative?", *IMA Journal of Mathematical Control and Information*, **29(2)**, 2012, pp. 147-170.
46. I. Karafyllis and Z.-P. Jiang, "A New Small-Gain Theorem with an Application to the Stabilization of the Chemostat", *International Journal of Robust and Nonlinear Control*, **22(14)**, 2012, pp. 1602-1630.
47. I. Karafyllis and Z.-P. Jiang, "Reduced Order Dead-Beat Observers for the Chemostat", *Nonlinear Analysis Real World Applications*, **14(1)**, 2013, pp. 340-351.
48. P. Pepe and I. Karafyllis, "Converse Lyapunov-Krasovskii Theorems for Systems Described by Neutral Functional Differential Equations in Hale's Form", *International Journal of Control*, **86(2)**, 2013, pp. 232-243.
49. I. Karafyllis and M. Krstic, "Delay-Robustness of Linear Predictor Feedback Without Restriction on Delay Rate", *Automatica*, **49(6)**, 2013, pp. 1761-1767.
50. T. Ahmed-Ali, I. Karafyllis and F. Lamnabhi-Lagarrigue, "Global Exponential Sampled-Data Observers for Nonlinear Systems with Delayed Measurements", *Systems and Control Letters*, **62(7)**, 2013, pp. 539-549.
51. I. Karafyllis and M. Krstic, "Robust Predictor Feedback for Discrete-Time Systems with Input Delays", *International Journal of Control*, **86(9)**, 2013, pp. 1652-1663.
52. I. Karafyllis and Z.-P. Jiang, "Global Stabilization of Nonlinear Systems Based on Vector Control Lyapunov Functions", *IEEE Transactions on Automatic Control*, **58(10)**, 2013, pp. 2550-2562.
53. I. Karafyllis and M. Krstic, "Stabilization of Nonlinear Delay Systems Using Approximate Predictors and High-Gain Observers", *Automatica*, **49(12)**, 2013, pp. 3623-3631.
54. I. Karafyllis, "Feedback Stabilization Methods for the Solution of Nonlinear Programming Problems", *Journal of Optimization Theory and Applications*, **161(3)**, 2014, pp. 783-806.
55. I. Karafyllis, M. Krstic, T. Ahmed-Ali and F. Lamnabhi-Lagarrigue, "Global Stabilization of Nonlinear Delay Systems with a Compact Absorbing Set", *International Journal of Control*, **87(5)**, 2014, pp. 1010-1027.
56. I. Karafyllis and M. Krstic, "On the Relation of Delay Equations to First-Order Hyperbolic Partial Differential Equations", *ESAIM Control, Optimisation and Calculus of Variations*, **20(3)**, 2014, pp. 894 - 923.

57. I. Karafyllis and M. Krstic, “Numerical Schemes for Nonlinear Predictor Feedback”, *Mathematics of Control, Signals and Systems*, **26(4)**, 2014, pp. 519-546.
58. I. Karafyllis, M. Malisoff, M. de Queiroz, M. Krstic and R. Yang, “Predictor-Based Tracking for Neuromuscular Electrical Stimulation”, *International Journal of Robust and Nonlinear Control*, **25(14)**, 2015, pp. 2391-2419.
59. I. Karafyllis and M. Papageorgiou, “Global Exponential Stability for Discrete-Time Networks with Applications to Traffic Networks”, *IEEE Transactions on Control of Network Systems*, **2(1)**, 2015, pp. 68-77.
60. I. Karafyllis, M. Kontorinaki and M. Papageorgiou, “Global Exponential Stabilization of Freeway Models”, *International Journal of Robust and Nonlinear Control*, **26(6)**, 2016, pp. 1184-1210.
61. I. Karafyllis and M. Krstic, “Sampled-Data Stabilization of Nonlinear Delay Systems with a Compact Absorbing Set”, *SIAM Journal on Control and Optimization*, **54(2)**, 2016, pp. 790–818.
62. I. Karafyllis and M. Papageorgiou, “Stability Results for Simple Traffic Models Under PI-Regulator Control”, to appear in the *IMA Journal of Mathematical Control and Information* (see also [arXiv:1308.2505](https://arxiv.org/abs/1308.2505) [math.OC]).
63. I. Karafyllis and M. Krstic, “ISS With Respect to Boundary Disturbances for 1-D Parabolic PDEs”, to appear in *IEEE Transactions on Automatic Control* (see also [arXiv:1505.06457](https://arxiv.org/abs/1505.06457) [math.OC]).

## Conference Papers

- C1. I. Karafyllis and J. Tsiniias, “Converse Lyapunov Theorems for Non-Uniform in Time Global Asymptotic Stability and Stabilization by Means of Time-Varying Feedback”, *Nonlinear Control Systems (NOLCOS) 2001*, Elsevier, New York 2002, pp. 801-805.
- C2. I. Karafyllis and J. Tsiniias, “Characterizations of the Non-Uniform in Time ISS Property and Applications”, *Proceedings of Mathematical Theory of Networks and Systems (MTNS) 2002*.
- C3. I. Karafyllis and C. Kravaris, “Robust Output Feedback Stabilization and Nonlinear Observer Design”, *Proceedings of the 42<sup>nd</sup> IEEE Conference on Decision and Control 2003*, pp. 5847-5852.
- C4. I. Karafyllis and S. Kotsios, “Conditions for Global Asymptotic Stabilization of Discrete-Time Systems”, *Proceedings of NOLCOS 2004*, pp. 335-340.
- C5. I. Karafyllis and C. Kravaris, “Non-Uniform in Time State Estimation of Dynamical Systems”, *Proceedings of NOLCOS 2004*, pp. 983-988.
- C6. I. Karafyllis, “Lyapunov Theorems for Systems Described by Retarded Functional Differential Equations”, *Proceedings of the Joint 44<sup>th</sup> IEEE Conference on Decision and Control and European Control Conference 2005*, pp. 4730-4735.
- C7. I. Karafyllis, “Finite-Time Global Stabilization by Means of Time-Varying Distributed Delay Feedback”, *Proceedings of the Joint 44<sup>th</sup> IEEE Conference on Decision and Control and European Control Conference 2005*, pp. 5776-5781.
- C8. I. Karafyllis and C. Kravaris, “On the Observer Problem for Discrete-Time Control Systems”, *Proceedings of the Joint 44<sup>th</sup> IEEE Conference on Decision and Control and European Control Conference 2005*, pp. 6347-6352.
- C9. I. Karafyllis, P. Pepe and Z.-P. Jiang, “Stability Results for Systems Described by Retarded Functional Differential Equations”, *Proceedings of the 9<sup>th</sup> European Control Conference 2007*, pp. 1982-1989.

- C10. I. Karafyllis and C. Kravaris, "Global Stability Results for Systems under Sampled-Data Control", *Proceedings of the 9<sup>th</sup> European Control Conference 2007*, pp. 5761-5768.
- C11. I. Karafyllis and Z.-P. Jiang, "A Small-Gain Theorem for a Wide Class of Feedback Systems with Control Applications", *Proceedings of the 9<sup>th</sup> European Control Conference 2007*, pp. 5368-5375.
- C12. I. Karafyllis, P. Pepe and Z.-P. Jiang, "Stability results for systems described by coupled retarded functional differential equations and functional difference equations", *7<sup>th</sup> IFAC Workshop on Time Delay Systems (TDS) 2007*.
- C13. P. Pepe, I. Karafyllis and Z.-P. Jiang, "A Liapunov-Krasovskii Criterion for ISS of Systems Described by Coupled Delay Differential and Difference Equations", *Proceedings of the 46<sup>th</sup> IEEE Conference on Decision and Control 2007*, pp. 2077-2082.
- C14. I. Karafyllis and J. Tsinias, "Generalizations of the Coron-Rosier Theorem on Feedback Stabilization", *Proceedings of Mathematical Theory of Networks and Systems (MTNS) 2008*.
- C15. I. Karafyllis and Z.-P. Jiang, "Necessary and Sufficient Lyapunov-like Conditions for Robust Nonlinear Stabilization", *Proceedings of Mathematical Theory of Networks and Systems (MTNS) 2008*.
- C16. I. Karafyllis and C. Kravaris, "From Continuous-Time Design to Sampled-Data Design of Nonlinear Observers", *Proceedings of the 47<sup>th</sup> IEEE Conference on Decision and Control 2008*, pp. 5408-5413.
- C17. I. Karafyllis and Z.-P. Jiang, "Control Lyapunov Functionals and Robust Stabilization of Nonlinear Time-Delay Systems", *Proceedings of the 47<sup>th</sup> IEEE Conference on Decision and Control 2008*, pp. 5312-5317.
- C18. I. Karafyllis and C. Kravaris, "Relaxed Lyapunov Criteria for Robust Global Stabilization of Nonlinear Systems", *Proceedings of the 10<sup>th</sup> European Control Conference 2009*, pp. 1089-1094.
- C19. I. Karafyllis and Z.-P. Jiang, "A Vector Small-Gain Theorem for General Nonlinear Control Systems", *Proceedings of the 48<sup>th</sup> IEEE Conference on Decision and Control 2009*, Shanghai, China, 2009, pp. 7996-8001.
- C20. I. Karafyllis and L. Grüne, "Feedback Stabilization Methods for the Numerical Solution of Systems of Ordinary Differential Equations", *Volume 1 of the Proceedings of the International Conference on Numerical Analysis and Applied Mathematics 2009 (ICNAAM 2009)*, Rethymno, Greece, American Institute of Physics, 2009, pp. 152-155.
- C21. I. Karafyllis, "Stabilization By Means of Approximate Predictors for Systems with Delayed Input", *Proceedings of the 9<sup>th</sup> IFAC Workshop on Time Delay Systems (TDS) 2010*, Prague, Czech Republic.
- C22. I. Karafyllis, Z.-P. Jiang and G. Athanasiou, "Nash Equilibrium and Robust Stability in Dynamic Games: A Small-Gain Perspective", *Proceedings of the 49<sup>th</sup> IEEE Conference on Decision and Control 2010*, Atlanta, GA, U.S.A., 2010, pp. 7425-7430.
- C23. I. Karafyllis and M. Krstic, "Nonlinear Stabilization under Sampled and Delayed Measurements, and with Inputs Subject to Delay and Zero-Order Hold", *Proceedings of the 50<sup>th</sup> IEEE Conference on Decision and Control 2011 and European Control Conference*, Orlando, FL, U.S.A., 2011, pp. 7581-7586.
- C24. I. Karafyllis and C. Kravaris, "Global Exponential Observers for Two Classes of Nonlinear Systems", *Proceedings of Mathematical Theory of Networks and Systems (MTNS) 2012*, Melbourne, Australia, 2012.
- C25. L. Grüne and I. Karafyllis, "Lyapunov Function Based Step Size Control for Numerical ODE Solvers with Application to Optimization Algorithms", *Mathematical Theory of Networks and Systems (MTNS) 2012*, Melbourne, Australia, 2012. Also in *Mathematical System Theory - Festschrift in Honor of Uwe Helmke on the Occasion of his 60<sup>th</sup>*



*Birthday*, K. Hüper and J. Trumpf (ed.), CreateSpace, 2013, 183 – 210, Smart-Link: <http://users.cecs.anu.edu.au/~trumpf/UH60Festschrift.pdf>

- C26. T. Ahmed-Ali, I. Karafyllis and F. Lamnabhi-Lagarrigue, “Global Exponential Sampled-Data Observers for Nonlinear Systems with Delayed Measurements”, *Colloque en l'honneur de Gauthier Sallet à Saint-Louis*, Senegal, 2012.
- C27. I. Karafyllis and Z.-P. Jiang, “Vector Control Lyapunov Functions as a Tool for Decentralized and Distributed Control”, *Proceedings of the 9<sup>th</sup> Asian Control Conference*, Istanbul, Turkey, 2013.
- C28. I. Karafyllis and M. Papageorgiou, “Stability Investigation for Simple PI-Controlled Traffic Systems”, *Proceedings of the 6<sup>th</sup> International Symposium on Communications, Controls, and Signal Processing*, Athens, Greece, 2014, pp. 186-189.
- C29. I. Karafyllis, M. Malisoff, M. de Queiroz and M. Krstic, “A New Tracking Controller for Neuromuscular Electrical Stimulation under Input Delays: Case Study in Prediction”, *Proceedings of the American Control Conference 2014*, Portland, OR, U.S.A., pp. 4186-4191.
- C30. I. Karafyllis, M. Malisoff and M. Krstic, “Sampled-Data Feedback Stabilization of Age Structured Chemostat Models”, *Proceedings of the American Control Conference 2015*, Chicago, IL, U.S.A., pp. 4549-4554.
- C31. I. Karafyllis, M. Kontorinaki and M. Papageorgiou, “Global Exponential Stabilization of Freeway Models”, *Proceedings of the European Control Conference 2015*, Linz, Austria, pp. 2645-2650.
- C32. I. Karafyllis and M. Krstic, “Sampled-Data Stabilization of Nonlinear Delay Systems With a Compact Absorbing Set”, *Proceedings of the IFAC Workshop on Time Delay Systems (TDS) 2015*, Ann Arbor, MI, U.S.A., pp. 410-415.
- C33. I. Karafyllis and M. Krstic, “Disturbance Attenuation Limitations for Systems with Input Delays”, *Proceedings of the IEEE Conference on Decision and Control (CDC) 2015*, Osaka, Japan, pp. 6397-6402.
- C34. T. Ahmed-Ali, I. Karafyllis, F. Giri, M. Krstic, F. Lamnabhi-Lagarrigue, “Stability Result for a Class of Sampled-Data Systems and Application to Observer Design for Cascade ODE-PDE Systems”, submitted to the *22nd International Symposium on Mathematical Theory of Networks and Systems* to be held in Minneapolis, MN, USA.
- C35. I. Karafyllis and M. Krstic, “Input-to State Stability with Respect to Boundary Disturbances for the 1-D Heat Equation”, submitted to the *55<sup>th</sup> IEEE Conference on Decision and Control (CDC)*.

---

## Submitted Papers

- S1. I. Karafyllis and M. Krstic, “Stability of Integral Delay Equations and Stabilization of Age-Structured Chemostats”, submitted to *ESAIM Control, Optimisation and Calculus of Variations*.
- S2. I. Karafyllis, M. Kontorinaki and M. Papageorgiou, “Robust Global Adaptive Exponential Stabilization of Discrete-Time Systems with Application to Freeway Traffic Control”, submitted to *IEEE Transactions on Automatic Control* (see also [arXiv:1509.00257](https://arxiv.org/abs/1509.00257) [math.OC]).
- S3. I. Karafyllis and M. Krstic, “Global Dynamical Solvers for Nonlinear Programming Problems”, submitted to *SIAM Journal on Control and Optimization* (see also [arXiv:1512.06955](https://arxiv.org/abs/1512.06955) [math.OC]).

- S4. T. Ahmed-Ali, I. Karafyllis, F. Giri, M. Krstic, F. Lamnabhi-Lagarrigue, “Exponential Stability Analysis of Sampled-Data ODE-PDE Systems and Application to Observer Design”, submitted to *IEEE Transactions on Automatic Control*.
- S5. X. Li, R. Wang, X.-M. Sun and I. Karafyllis, “Stability Analysis for Uncertain Systems with Time-Varying Delay: A Switching Method”, submitted to *Automatica*.
- S6. I. Karafyllis and M. Krstic, “ISS in Different Norms for 1-D Parabolic PDEs With Boundary Disturbances”, submitted to *SIAM Journal on Control and Optimization* (see also [arXiv:1605.01364](https://arxiv.org/abs/1605.01364) [math.OC]).

## Participation in Research Programs

**February 2013 - now:** Member of the research team for the research program “TRAMAN21 (Traffic Management for the 21st Century)”. Funding from the European Union (European Research Council). Website: <http://www.traman21.tuc.gr/>

## Tables of Journal Papers

Year	99	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16
Number of papers	1	1	4	2	3	6	4	7	7	2	4	5	7	4	2	2

Number of coauthors	Number of published or accepted papers
0	16
1	35
2	9
3	2
4	1

<b>Journal</b>	<b>Published Papers</b>	<b>Papers to appear</b>	<b>Submitted Papers</b>	<b>Impact Factor</b>
<i>Systems and Control Letters</i>	8	-	-	1.886
<i>IEEE Transactions on Automatic Control</i>	6	1	2	3.167
<i>IMA Journal of Mathematical Control and Information</i>	5	1	-	0.967
<i>SIAM Journal Control and Optimization</i>	6	-	2	1.38
<i>European Journal of Control</i>	4	-	-	0.792
<i>International Journal of Robust and Nonlinear Control</i>	6	-	-	2.652
<i>International Journal of Control</i>	6	-	-	1.065
<i>Nonlinear Analysis: Theory, Methods and Applications</i>	2	-	-	1.612
<i>Journal of Mathematical Analysis and Applications</i>	2	-	-	1.119
<i>ESAIM Control, Optimisation and Calculus of Variations</i>	3	-	1	1.282
<i>Automatica</i>	3	-	1	3.132
<i>Mathematics of Control, Signals and Systems</i>	2	-	-	1.152
<i>Journal of Difference Equations and Applications</i>	1	-	-	0.926
<i>Discrete and Continuous Dynamical Systems: Series B</i>	1	-	-	0.937
<i>Journal of Economic Dynamics and Control</i>	1	-	-	1.057
<i>Science in China Series F: Information Sciences</i>	1	-	-	0.62
<i>Computers and Mathematics with Applications</i>	1	-	-	1.996
<i>Nonlinear Analysis Real World Applications</i>	1	-	-	2.338
<i>Journal of Optimization Theory and Applications</i>	1	-	-	1.406
<i>IEEE Transactions on Control of Network Systems</i>	1	-	-	new journal
<b>Total number of papers</b>	<b>61</b>	<b>2</b>	<b>6</b>	

---

## Research Interests

- 1) Stability Theory of Dynamical Systems** with emphasis on Lyapunov stability theory for uncertain nonlinear deterministic systems described by:
  - a. finite or infinite dimensional difference equations [12,14,37,46,59],
  - b. ordinary differential equations [5,6,7,8,9,19,20,21,22,39,45,46,S3],
  - c. retarded functional differential and integral equations [8,13,19,20,21,26,27,32,35,39,46,48,56,BC1,S1,S5],
  - d. first-order hyperbolic partial differential equations [32,56,S1],
  - e. 1-D parabolic partial differential equations [63,S6],
  - f. coupled retarded functional differential equations and functional difference equations [19,20,21,23,39,46],
  - g. impulsive differential equations (hybrid systems, systems under sampled-data control) [16,19,20,21,31,39,46,S4].
- 2) Mathematical Systems and Control Theory** with emphasis on the solution of robust feedback stabilization problems [1,2,3,4,5,10,11,15,16,17,22,25,29,30,33,35,36,40,42,44,49,51,52,53,55,56,57,60,61,62,BC2,BC3,S1,S2], tracking control problems [1,4,6,58] and observer design/existence problems [11,18,24,34,41,43,47,50,S4] for nonlinear uncertain deterministic control systems of the above classes.
- 3) Applications of major results of Mathematical Control Theory** to Game Theory [37], Fixed Point Theory [37], Nonlinear Programming [54,S3], Mathematical Biology [22,30,33,46,47,S1], Mathematical Economics [28,37] and Numerical Analysis [38].
- 4) Applications of major results of Numerical Analysis** to Mathematical Systems and Control Theory [12,25,40,57,58,61].
- 5) Mathematical modeling of traffic systems** [59,60,62,S2] and modeling of physical, chemical, biological and economic phenomena based on scientific principles and logical requirements (non-empirical models) [22,28,33,37,S1].
- 6) Applications of major results of Non-Smooth Analysis and Set-Valued Analysis** to Mathematical Systems and Control Theory [3,17].