

NIKOLAOS BEKIARIS-LIBERIS

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Control Systems Laboratory
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- POSITIONS
1. **Technical University of Crete, Greece**
Associate Professor, Department of **Electrical and Computer Engineering**, July 2022–current.
 2. **Technical University of Crete, Greece**
Assistant Professor, Department of **Electrical and Computer Engineering**, January 2019–July 2022.
 3. **Technical University of Crete, Greece**
Marie Sklodowska-Curie Fellow, Department of **Production Engineering and Management**, May 2017–August 2019.
 4. **Technical University of Crete, Greece**
Adjunct Professor, Department of **Electrical & Computer Engineering**, September 2015–May 2017.
 5. **Technical University of Crete, Greece**
Postdoctoral Researcher in the Department of **Production Engineering and Management**, December 2014–May 2017
Lab director: Markos Papageorgiou.
 6. **University of California Berkeley, USA**
Postdoctoral Researcher in the Departments of **Electrical Engineering & Computer Sciences** and **Civil & Environmental Engineering**, August 2013–November 2014
Lab director: Alexandre Bayen.

- EDUCATION
1. **University of California San Diego, USA**
PhD in Mechanical & Aerospace Engineering, June 2013
Advisor: Miroslav Krstic.
 2. **University of California San Diego, USA**
MS in Mechanical & Aerospace Engineering, February 2010 (GPA: 4.0/4.0)
 3. **National Technical University of Athens, Greece**
Diploma in Electrical and Computer Engineering, November 2007

- RESEARCH INTERESTS
- Control Theory (Distributed Parameter and Delay Systems, Nonlinear Control, Switched Systems, Adaptive and Learning Systems, Large-Scale Complex Systems)
 - Applications (Traffic Flow Control & Estimation, Control of Connected & Automated Vehicles, Biological Transport Systems, Vehicle Control (including

Electric Vehicles), Automotive Engines and Catalysts, Occupancy Detection in Smart Buildings, Networked Control Systems)

PUBLICATIONS H-index: 34. Citations: 3386 (as of: March 2024, source: Google Scholar)
H-index: 28. Citations: 2281 (as of: March 2024, source: Scopus)

Books

1. **N. Bekiaris-Liberis** and M. Krstic, “Nonlinear Control Under Nonconstant Delays”, SIAM, 2013. [link](#)

Book Chapters

1. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, “Backstepping Designs in the Presence of Non-constant Delays on the Virtual Input”, in I. Karafyllis, M. Malisoff, F. Mazenc, and P. Pepe (Eds), *Recent Results on Nonlinear Time Delayed Systems*, Advances in Dynamics and Delays Series, Springer, 2015. [link](#)
2. **N. Bekiaris-Liberis** and M. Krstic, “Control of Nonlinear Systems With Delays”, in T. Samad and J. Baillieul, *Encyclopedia of Systems and Control*, Springer, 2014. [link](#)

Journal papers

47. J.-P. Humaloja and **N. Bekiaris-Liberis**, “Stabilization of a class of large-scale systems of linear hyperbolic PDEs via continuum approximation of exact backstepping kernels, *IEEE Transactions on Automatic Control*, under review, 2024.
46. A. Samii and **N. Bekiaris-Liberis**, “Simultaneous compensation of actuation and communication delays for heterogeneous platoons via predictor-feedback CACC with integral action,” *IEEE Transactions on Intelligent Vehicles*, to appear, 2024. [link](#)
45. **N. Bekiaris-Liberis**, “Nonlinear predictor-feedback cooperative adaptive cruise control of vehicles with nonlinear dynamics and input delay,” *International Journal of Robust and Nonlinear Control*, to appear, 2024. [link](#)
44. **N. Bekiaris-Liberis**, D. Bresch-Pietri, and N. Petit, “Compensation of input-dependent hydraulic input delay for a model of a microfluidic process under Zweifach-Fung effect,” *Automatica*, vol. 160, paper no. 111428, 2024. [link](#)
43. **N. Bekiaris-Liberis**, “Robust string stability and safety of CTH predictor-feedback CACC,” *IEEE Transactions on Intelligent Transportation Systems*, vol. 24, pp. 8209–8221, 2023. [link](#)
42. **N. Bekiaris-Liberis**, “On 1-D PDE-based cardiovascular flow bottleneck modeling and analysis: A vehicular traffic flow-inspired approach,” *IEEE Transactions on Automatic Control*, vol. 68, pp. 3728–3735, 2023. [link](#)
41. M. Zhao, C. Roncoli, Y. Wang, **N. Bekiaris-Liberis**, J. Guo, and S. Cheng, “Evaluation of three generic approaches to freeway traffic state estimation with fixed and mobile sensing,” *IEEE Transactions on Intelligent Transportation Systems*, vol. 23, pp. 13155-13177, 2022. [link](#)

40. **N. Bekiaris-Liberis** and A. Delis, “PDE-based feedback control of freeway traffic flow via time-gap manipulation of ACC-equipped vehicles,” *IEEE Transactions on Control Systems Technology* (impact factor: 4.9), vol. 29, pp. 461–469, 2021. [link](#)
39. **N. Bekiaris-Liberis**, “Hybrid boundary stabilization of linear first-order hyperbolic PDEs despite almost quantized measurements and control input,” *Systems and Control Letters* (impact factor: 2.6), vol. 146, paper no. 104809, 2020. [link](#)
38. I. Papamichail, **N. Bekiaris-Liberis**, A. I. Delis, D. Manolis, K.-S. Mourtakis, I. K. Nikolos, C. Roncoli, & M. Papageorgiou, “Motorway traffic flow modelling, estimation and control with vehicle automation and communication systems,” *Annual Reviews in Control* (impact factor: 4.8), vol. 48, pp. 325–346, 2019. [link](#)
37. **N. Bekiaris-Liberis** and R. Vazquez, “Nonlinear bilateral output-feedback control for a class of viscous Hamilton-Jacobi PDEs,” *Automatica* (impact factor: 6.4), vol. 101, pp. 223–231, 2019. [link](#)
36. X. Cai, **N. Bekiaris-Liberis**, and M. Krstic, “Input-to-state stability and inverse optimality of predictor feedback for multi-input linear systems,” *Automatica* (impact factor 6.4), vol. 103, pp. 549–557, 2019. [link](#)
35. I. Karafyllis, **N. Bekiaris-Liberis**, and M. Papageorgiou, “Feedback control of nonlinear hyperbolic PDE systems inspired by traffic flow models,” *IEEE Transactions on Automatic Control* (impact factor: 5.1), vol. 64, pp. 3647–3662, 2019. [link](#)
34. **N. Bekiaris-Liberis** and M. Krstic, “Compensation of transport actuator dynamics with input-dependent moving controlled boundary,” *IEEE Transactions on Automatic Control* (impact factor: 5.1), vol. 63, pp. 3889–3896, 2018. [link](#)
33. **N. Bekiaris-Liberis** and M. Krstic, “Compensation of actuator dynamics governed by quasilinear hyperbolic PDEs,” *Automatica* (impact factor: 6.4), vol. 92, pp. 29–40, 2018. [link](#)
32. S. Papadopoulou, C. Roncoli, **N. Bekiaris-Liberis**, I. Papamichail, and M. Papageorgiou, “Microscopic simulation-based validation of a per-lane traffic state estimation scheme for highways with connected vehicles,” *Transportation Research Part C* (impact factor: 5.8), vol. 86, pp. 441–452, 2018. [link](#)
31. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, “Highway traffic state estimation per lane in the presence of connected vehicles,” *Transportation Research Part B* (impact factor: 4.6), vol. 106, pp. 1–28, 2017. [link](#)
30. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, “Predictor-based adaptive cruise control design,” *IEEE Transactions on Intelligent Transportation Systems* (impact factor: 5.7), vol. 19, pp. 3181–3195, 2018. [link](#)
29. X. Cai, **N. Bekiaris-Liberis**, and M. Krstic, “Input-to-state stability and inverse optimality of linear time-varying-delay predictor feedbacks,” *IEEE Transactions on Automatic Control* (impact factor: 5.1), vol. 63, pp. 233–240, 2018. [link](#)

28. M. Diagne, **N. Bekiaris-Liberis**, and M. Krstic, “Compensation of input delay that depends on delayed input,” *Automatica* (impact factor: 6.4), vol. 85, pp. 362–373, 2017. [link](#)
27. M. Diagne, **N. Bekiaris-Liberis**, A. Otto, and M. Krstic, “Control of transport PDE/nonlinear ODE cascades with state-dependent propagation speed,” *IEEE Transactions on Automatic Control* (impact factor: 5.1), vol. 62, pp. 6278–6293, 2017. [link](#)
26. C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou, “Lane-changing feedback control for efficient lane assignment at motorway bottlenecks,” *Transportation Research Record* (impact factor: 0.54), vol. 2625, pp. 20–31, 2017.
25. M. Fountoulakis, **N. Bekiaris-Liberis**, C. Roncoli, I. Papamichail, and M. Papageorgiou, “Highway traffic state estimation with mixed connected and conventional vehicles: Microscopic simulation-based testing,” *Transportation Research Part C: Emerging Technologies* (impact factor: 5.8), vol. 78, pp. 13–33, 2017. [link](#)
24. M. Diagne, **N. Bekiaris-Liberis**, and M. Krstic, “Time- and state-dependent input delay-compensated bang-bang control of a screw extruder for 3D printing,” *International Journal of Robust and Nonlinear Control* (impact factor: 4), vol. 27, pp. 3727–3757, 2017. [link](#)
23. M. Jin, **N. Bekiaris-Liberis**, K. Weekly, C. Spanos, and A. M. Bayen, “Occupancy detection via environmental sensing,” *IEEE Transactions on Automation Science and Engineering* (impact factor: 5.2), vol. 15, pp. 443–455, 2018. [link](#)
22. C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou, “Use of speed measurements for highway traffic state estimation: Case studies on NGSIM data and highway A20, Netherlands,” *Transportation Research Record* (impact factor: 0.54), vol. 2559, pp. 90–100, 2016.
21. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, “Highway traffic state estimation with mixed connected and conventional vehicles,” *IEEE Transactions on Intelligent Transportation Systems* (impact factor: 5.7), vol. 17, pp. 3484–3497, 2016. [link](#)
20. **N. Bekiaris-Liberis** and M. Krstic, “Predictor-feedback stabilization of multi-input nonlinear systems,” *IEEE Transactions on Automatic Control* (impact factor: 5.1), vol. 62, pp. 516–531, 2017. [link](#)
19. **N. Bekiaris-Liberis** and M. Krstic, “Stability of predictor-based feedback for nonlinear systems with distributed input delay,” *Automatica* (impact factor: 6.4), vol. 70, pp. 195–203, 2016. [link](#)
18. P.-O. Lamare and **N. Bekiaris-Liberis**, “Control of 2×2 linear hyperbolic systems: Backstepping-based trajectory generation and PI-based tracking,” *Systems and Control Letters* (impact factor: 2.6), vol. 86, pp. 24–33, 2015. [link](#)
17. K. Weekly, **N. Bekiaris-Liberis**, M. Jin, and A. Bayen “Modeling and estimation of the humans’ effect on the CO₂ dynamics inside a conference room”,

- IEEE Transactions on Control Systems Technology (impact factor: 4.9), vol. 23, pp. 1770–1781, 2015. [link](#)
16. **N. Bekiaris-Liberis**, A. Bayen “Nonlinear stabilization of a viscous Hamilton-Jacobi PDE”, IEEE Transactions on Automatic Control (impact factor: 5.1), vol. 60, pp. 1698–1703, 2014. [link](#)
 15. **N. Bekiaris-Liberis**, “Simultaneous compensation of input and state delays for nonlinear systems”, Systems and Control Letters (impact factor: 2.6), vol. 73, pp. 96–102, 2014. [link](#)
 14. **N. Bekiaris-Liberis** and M. Krstic, “Compensation of wave actuator dynamics for nonlinear systems”, IEEE Transactions on Automatic Control (impact factor: 5.1), vol. 59, pp. 1555–1570, 2014. [link](#)
 13. M. Krstic and **N. Bekiaris-Liberis**, “Nonlinear stabilization in infinite dimension”, Annual Reviews in Control (impact factor: 4.8), vol. 37, pp. 220–231, 2013. [link](#)
 12. **N. Bekiaris-Liberis** and M. Krstic, “Nonlinear control under delays that depend on delayed states”, European Journal of Control (impact factor: 1.6), vol. 19, pp. 389–398, 2013. [link](#)
 11. **N. Bekiaris-Liberis** and M. Krstic, “Robustness of nonlinear predictor feedback laws to time- and state-dependent delay perturbations”, Automatica (impact factor: 6.4), vol. 49, pp. 1576–1590, 2013. [link](#)
 10. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, “Adaptive stabilization of LTI systems with distributed input delay”, International Journal of Adaptive Control and Signal Processing (impact factor: 2.2), vol. 27, pp. 47–65, 2013. [link](#)
 9. **N. Bekiaris-Liberis** and M. Krstic, “Compensation of state-dependent input delay for nonlinear systems”, IEEE Transactions on Automatic Control (impact factor: 5.1), vol. 58, pp. 275–289, 2013. [link](#)
 8. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, “Compensation of state-dependent state delay for nonlinear systems”, Systems and Control Letters (impact factor: 2.6), vol. 61, pp. 849–856, 2012. [link](#)
 7. **N. Bekiaris-Liberis** and M. Krstic, “Compensation of time-varying input and state delays for nonlinear systems”, Journal of Dynamic Systems, Measurement, and Control (impact factor: 1.4), vol. 134, paper 011009, 2012. [link](#)
 6. **N. Bekiaris-Liberis** and M. Krstic, “Lyapunov stability of linear predictor feedback for distributed input delays”, IEEE Transactions on Automatic Control (impact factor: 5.1), vol. 56, pp. 655–660, 2011. [link](#)
 5. **N. Bekiaris-Liberis** and M. Krstic, “Compensating the distributed effect of diffusion and counter-convection in multi-input and multi-output LTI systems”, IEEE Transactions on Automatic Control (impact factor: 5.1), vol. 56, pp. 637–642, 2011. [link](#)
 4. M. Krstic and **N. Bekiaris-Liberis**, “Compensation of infinite-dimensional input dynamics”, Annual Reviews in Control (impact factor: 4.8), vol. 34, pp. 233–244, 2010. [link](#)

3. **N. Bekiaris-Liberis** and M. Krstic, “Compensating the distributed effect of a wave PDE in the actuation or sensing path of MIMO LTI systems”, *Systems and Control Letters* (impact factor: 2.6), vol. 59, pp. 713–719, 2010. [link](#)
2. **N. Bekiaris-Liberis** and M. Krstic, “Stabilization of linear strict-feedback systems with delayed integrators”, *Automatica* (impact factor: 6.4), vol. 56, pp. 1902–1910, 2010. [link](#)
1. **N. Bekiaris-Liberis** and M. Krstic, “Delay-adaptive feedback for linear feed-forward systems”, *Systems and Control Letters* (impact factor: 2.6), vol. 59, pp. 277–283, 2010. [link](#)

Conference papers

63. F. Koudohode and **N. Bekiaris-Liberis**, “Simultaneous compensation of input delay and state quantization for linear systems via switched predictor feedback,” *IEEE Conference on Decision and Control*, submitted, 2024.
62. J.-P. Humaloja and **N. Bekiaris-Liberis**, “On stabilization of large-scale systems of linear hyperbolic PDEs via continuum approximation of exact backstepping kernels,” *IEEE Conference on Decision and Control*, submitted, 2024.
61. A. Samii and **N. Bekiaris-Liberis**, “Simultaneous compensation of actuation and communication delays for heterogeneous platoons via predictor-feedback CACC with integral action,” *European Control Conference*, Stockholm, 2024.
60. A. Samii and **N. Bekiaris-Liberis**, “Robustness of string stability of linear predictor-feedback CACC to communication delay,” *IEEE International Conference on Intelligent Transportation Systems*, Bilbao, Spain, 2023.
59. **N. Bekiaris-Liberis**, “Nonlinear predictor-feedback cooperative adaptive cruise control,” *IEEE Conference on Decision and Control*, Singapore, 2023.
58. **N. Bekiaris-Liberis**, D. Bresch-Pietri, and N. Petit, “Predictor-feedback control of a model of microfluidic process with hydraulic input-dependent input delay,” *European Control Conference*, 2023.
57. **N. Bekiaris-Liberis**, “Robustness of string stability to delay mismatch and safety of CTH predictor-feedback CACC,” *IEEE Conference on Decision and Control*, 2022.
56. **N. Bekiaris-Liberis**, “On 1-D PDE-based cardiovascular flow bottleneck modeling and analysis: A vehicular traffic flow-inspired approach,” *13th IFAC Symposium on Dynamics and Control of Process Systems, including Biosystems*, Busan, South Korea, 2022.
55. Y. Zhang, M. Wang, J. Hu, and **N. Bekiaris-Liberis**, “Semi-constant spacing policy for leader-predecessor-follower platoon control via delayed measurements synchronization,” *IFAC World Congress*, 2020.
54. **N. Bekiaris-Liberis** and A. Delis, “Feedback control of freeway traffic flow via time-gap manipulation of ACC-equipped vehicles: A PDE-based approach,” *IFAC Workshop on Control of Transportation Systems*, 2019.
53. F. Tajdari, C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou “Integrated ramp metering and lane-changing feedback control at motorway bottlenecks,” *European Control Conference*, 2019.

52. **N. Bekiaris-Liberis** and R. Vazquez, "Nonlinear bilateral full-state feedback trajectory tracking for a class of viscous Hamilton-Jacobi PDEs," IEEE Conference on Decision and Control, 2018.
51. I. Karafyllis, **N. Bekiaris-Liberis**, and M. Papageorgiou, "Traffic flow inspired analysis and boundary control for a class of 2×2 hyperbolic systems," European Control Conference, 2018.
50. **N. Bekiaris-Liberis** and M. Krstic, "Control of nonlinear systems with actuator dynamics governed by quasilinear first-order hyperbolic PDEs," European Control Conference, 2018.
49. **N. Bekiaris-Liberis** and M. Krstic, "Compensation of transport actuator dynamics with input-dependent moving controlled boundary," European Control Conference, 2018.
48. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Predictor-based adaptive cruise control design with integral action," IFAC Symposium on Control in Transportation Systems, 2018.
47. S. Papadopoulou, C. Roncoli, **N. Bekiaris-Liberis**, I. Papamichail, and M. Papageorgiou, "Validation of a per lane traffic state estimation scheme for highways with connected vehicles," IEEE Conference on Intelligent Transportation Systems, 2017.
46. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Structural observability of multi-lane traffic with connected vehicles," IEEE Conference on Intelligent Transportation Systems, 2017.
45. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Traffic state estimation per lane in highways with connected vehicles," 2017 EWGT Meeting, 2017.
44. M. Diagne, **N. Bekiaris-Liberis**, and M. Krstic, "Compensation of input delay that depends on delayed input," American Control Conference, 2017.
43. C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou, "Lane-changing feedback control for efficient lane assignment at motorway bottlenecks," Transportation Research Board Annual Meeting, 2017.
42. M. Fountoulakis, **N. Bekiaris-Liberis**, C. Roncoli, I. Papamichail, and M. Papageorgiou, "Highway traffic state estimation with mixed connected and conventional vehicles: Microscopic simulation-based testing," IEEE Conference on Intelligent Transportation Systems, 2016.
41. C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou, "Optimal lane-changing control at motorway bottlenecks," IEEE Conference on Intelligent Transportation Systems, 2016.
40. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Predictor-based adaptive cruise control design," IEEE Multi-Conference on Systems and Control, 2016.
39. M. Diagne, **N. Bekiaris-Liberis**, A. Otto, and M. Krstic, "Control of transport PDE/nonlinear ODE cascades with state-dependent propagation speed," IEEE Conference on Decision and Control, 2016.

38. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Highway traffic state estimation with mixed connected and conventional vehicles," IFAC Symposium on Control in Transportation Systems, 2016.
37. **N. Bekiaris-Liberis** and M. Krstic, "Stability of predictor-based feedback for nonlinear systems with distributed input delay," American Control Conference, 2016.
36. C. Roncoli, **N. Bekiaris-Liberis**, and M. Papageorgiou, "Highway traffic state estimation using speed measurements: Case studies on NGSIM data and highway A20 in the Netherlands," Transportation Research Board, 2015.
35. **N. Bekiaris-Liberis**, C. Roncoli, and M. Papageorgiou, "Highway traffic state estimation with mixed connected and conventional vehicles using speed measurements," IEEE Conference on Intelligent Transportation Systems, 2015.
34. M. Diagne, **N. Bekiaris-Liberis**, and M. Krstic, "Time- and state-dependent input delay-compensated bang-bang-control of a screw extruder for 3D printing," ASME Dynamic Systems and Control Conference, 2015.
33. **N. Bekiaris-Liberis** and M. Krstic, "Predictor-feedback stabilization of multi-input nonlinear systems," IEEE Conference on Decision and Control, 2015.
32. M. Jin, **N. Bekiaris-Liberis**, K. Weekly, C. Spanos, and A. M. Bayen, "Sensing by proxy: Occupancy detection based on indoor CO₂ concentration," International Conference on Mobile Ubiquitous Computing, Systems, Services, and Technologies, 2015.
31. P.-O. Lamare and **N. Bekiaris-Liberis**, and A. Bayen, "Control of 2×2 linear hyperbolic systems: Backstepping-based trajectory generation and PI-based tracking," European Control Conference, 2015.
30. F. Mazenc, S.-I. Niculescu, **N. Bekiaris-Liberis**, "Asymptotic stabilization of linear time-varying systems with input delays via delayed static output feedback," American Control Conference, 2015.
29. K. Weekly, **N. Bekiaris-Liberis**, A. Bayen "Modeling and estimation of the humans' effect on the CO₂ dynamics inside a conference room", IEEE Conference on Decision and Control, 2014.
28. **N. Bekiaris-Liberis**, A. Bayen "Nonlinear stabilization of a viscous Hamilton-Jacobi PDE", IEEE Conference on Decision and Control, 2014.
27. **N. Bekiaris-Liberis**, "Simultaneous compensation of input and state delays for nonlinear systems", European Control Conference, 2014.
26. M. Krstic, **N. Bekiaris-Liberis** and R. Vazquez, "PDE control designs inspired by problems in off-shore drilling and oil production", *Plenary Paper*, 1st IFAC Workshop on Control of Systems Governed by Partial Differential Equations, 2013.
25. **N. Bekiaris-Liberis** and M. Krstic, "Nonlinear control under input delays that depend on delayed states", IEEE Conference on Decision and Control, 2013.

24. **N. Bekiaris-Liberis** and M. Krstic, "Oil drilling inspired compensation of wave actuator dynamics for nonlinear systems", IEEE Conference on Decision and Control, 2013.
23. M. Krstic and **N. Bekiaris-Liberis**, "Nonlinear Stabilization in Infinite Dimension", *Plenary Paper*, 9th IFAC Symposium on Nonlinear Control Systems, 2013.
22. **N. Bekiaris-Liberis** and M. Krstic, "Stabilization in the supremum norm of wave PDE/nonlinear ODE cascades", Mediterranean Conference on Control and Automation, 2013.
21. **N. Bekiaris-Liberis** and M. Krstic, "Robustness to time- and state-dependent delay perturbations in networked nonlinear control systems", American Control Conference, 2013.
20. M. Krstic and **N. Bekiaris-Liberis**, "Control of nonlinear delay systems: A Tutorial", IEEE Conference on Decision and Control, 2012.
19. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, "PDE-based analysis and control of the oxygen storage level in three-way catalytic converters", IEEE Conference on Decision and Control, 2012.
18. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, "Adaptive stabilization of LTI systems with distributed input delay", IEEE Conference on Decision and Control, 2012.
17. **N. Bekiaris-Liberis**, M. Jankovic and M. Krstic, "Compensation of state-dependent state delay for nonlinear systems", American Control Conference, 2012.
16. **N. Bekiaris-Liberis** and M. Krstic, "Compensation of state-dependent delays under local stabilizability assumption", American Control Conference, 2012.
15. **N. Bekiaris-Liberis** and M. Krstic, "Compensation of state-dependent input delay for nonlinear systems", IEEE Conference on Decision and Control, 2011.
14. **N. Bekiaris-Liberis** and M. Krstic, "Stabilization of nonlinear strict-feedback systems with time-varying delayed integrators", ASME Dynamic Systems and Control Conference , 2011.
13. **N. Bekiaris-Liberis** and M. Krstic, "Compensation of time-varying input delay for nonlinear systems ", Mediterranean Conference on Control and Automation, Corfu, Greece, 2011.
12. **N. Bekiaris-Liberis** and M. Krstic, "Lyapunov stability of linear predictor feedback for distributed input delays", IEEE Conference on Decision and Control, 2010.
11. **N. Bekiaris-Liberis** and M. Krstic, "Compensating the distributed effect of counter-convection and diffusion in multi-input and multi-output LTI systems", IEEE Conference on Decision and Control, 2010.
10. **N. Bekiaris-Liberis** and M. Krstic, "Compensating the distributed effect of a wave PDE in the actuation or sensing path of multi-input and multi-output LTI systems", 2010 ASME Dynamic Systems and Control Conference.

9. **N. Bekiaris-Liberis** and M. Krstic, “Delay-adaptive feedback for linear feed-forward systems”, American Control Conference , Baltimore, USA, 2010.
8. **N. Bekiaris-Liberis** and M. Krstic, “Stabilization of linear strict-feedback systems with delayed integrators”, American Control Conference , Baltimore, USA, 2010.
7. A. Pyrkin, A. Smyshlyaev, **N. Bekiaris-Liberis** and M. Krstic, “Rejection of sinusoidal disturbance of unknown frequency for linear systems with input delay”, American Control Conference , Baltimore, USA, 2010.
6. A. Pyrkin, A. Smyshlyaev, **N. Bekiaris-Liberis** and M. Krstic, “Output control algorithm for unstable plant with input delay and cancellation of unknown biased harmonic disturbance”, IFAC Workshop on Time Delay Systems ,Prague, Czech, 2010.
5. **N. Bekiaris Liberis** and M. Krstic, “On stabilizing strict-feedback linear systems with delayed integrators,” Mediterranean Conference on Control and Automation, Thessaloniki, Greece, June 2009.
4. K. G. Arvanitis, A. K. Boglou, **N. Bekiaris Liberis**, G. D. Pasgianos, “A simple method of tuning three-term controllers for integrating dead-time processes with inverse response,” European Control Conference, Budapest, Hungary, 2009.
3. K. G. Arvanitis, A. K. Boglou, **N. Bekiaris Liberis**, G. D. Pasgianos, “Tuning three-term controllers for integrating and stable or unstable first order plus dead-time processes,” European Control Conference, Budapest, Hungary, 2009.
2. K. G. Arvanitis, G. D. Pasgianos, A. K. Boglou, **N. Bekiaris Liberis**, “A new method of tuning three term controllers for dead-time processes with a negative/positive zero,” ICINCO-SPSMC, Milan, Italy, 2009.
1. **N. Bekiaris Liberis**, A. K. Boglou, K. G. Arvanitis, G. D. Pasgianos, P. N. Paraskevopoulos, “Design of nonlinear adaptive steam valve controllers for a turbo-generator system,” IASTED International Conference , Corfu, Greece, June 2008.

RECOGNITIONS

1. **IEEE Senior Member**, 2023.
2. **2022 ERC Consolidator Grant** (PE7 panel); proposal *C-NORA*.
3. George N. Saridis Best Transactions Paper; 2019 outstanding research paper award; **Best Regular Paper** published in IEEE Transactions on Intelligent Transportation Systems among all papers published within 2016–2018.
4. **Step 2 Finalist**; 2021 ERC Consolidator Grant (PE7 panel); proposal *C-NORA*.
5. **Grade A** (fully meets the European Research Council’s excellence criterion and is recommended for funding if sufficient funds are available) awarded for 2020 ERC Starting Grant proposal *INSPIRA*, ERC (PE7 panel).
6. **Member** of the research team, receiving the **2018 IEEE ITS Outstanding Application Award**, IEEE Intelligent Transportation Systems Society.

7. **Marie Sklodowska-Curie Individual Fellowship Grant** (about 13.5% of the submitted proposals was funded in the 2016 Reintegration scheme), European Commission, 2017.
8. **Best Paper Award**, International Conference on Mobile Ubiquitous Computing, Systems, Services and Technologies (UBICOMM), 2015.
9. **Chancellor's Dissertation Medal** in Engineering (Best Dissertation Award in Engineering among 150 PhDs granted in 2013), Jacobs School of Engineering, University of California, San Diego, 2014.
10. **Finalist for Best Student Paper Award**, IEEE Conference on Decision and Control, 2013.
11. **Outstanding Graduate Student Award**, Department of Mechanical and Aerospace Engineering, University of California, San Diego, 2012.
12. **Finalist for Best Student Paper Award**, ASME Dynamic Systems and Control Conference, 2010.
13. **Jacobs School of Engineering Fellow**, University of California, San Diego, 2008.
14. **Accepted to be a member of MENSA** (organization for people that belong in the upper 2% of the world's population based on their IQ), Greek Chapter, 2004.

LECTURES

1. **IEEE Conference on Decision and Control 2012**, *Tutorial Lecture*, Hawaii, December 2012.
2. **European Embedded Control Institute**, *Lecturer within the International Graduate School on Control*, San Diego, February 2020.
3. **Ioannou Fest**, Larnaca, June 2013.

INVITED TALKS

1. CNRS, **Centrale Lille**, October, 2023.
2. Department of Electrical & Computer Engineering, **National Technical University of Athens**, May, 2023.
3. Automatic Control and Systems Centre, **MINES ParisTech**, September, 2022.
4. 3rd Workshop on Delays and Constraints in Distributed Parameter Systems, November, 2021.
5. Distributed Parameter Systems Online Seminar Series, December, 2020.
6. Department of Computer Science and Control Systems, **ITMO University, St. Petersburg, Russia**, May 2018.
7. College of Information Science & Technology, **Donghua University, Shanghai, China**, March 2018.
8. College of Control Science & Engineering, **Zhejiang University, Hangzhou, China**, March 2018.
9. College of Mathematics, Physics, and Information Engineering, **Zhejiang Normal University, Jinhua, China**, March 2018.

10. Department of Electrical and Computer Engineering, **Aristotle University of Thessaloniki, Thessaloniki, Greece**, February 2018.
11. Department of Applied Mathematics & Physical Sciences, **National Technical University of Athens, Greece**, November 2017.
12. Department of Engineering Sciences, **University of Oxford, Oxford**, October 2017.
13. Department of Computer Sciences, **University of Zaragoza, Zaragoza**, July 2017.
14. Department of Electrical and Computer Engineering, **Technical University of Crete, Chania**, June 2017.
15. Department of Production Engineering and Management, **Technical University of Crete, Chania**, June 2014.
16. Department of Electrical and Electronic Engineering, **Imperial College, London**, June 2014.
17. Automatic Control Laboratory, **ETH, Zurich**, May 2014.
18. Department of Electrical and Computer Engineering, **University of Illinois, Urbana-Champaign, Champaign**, February 2014.
19. Department of Mechanical Engineering, **Delft University of Technology, Delft**, December 2013.
20. Department of Mechanical Engineering, **University of Puerto, Mayaguez**, October 2013.
21. Department of Chemical Engineering, **MIT, Cambridge**, May 2013.
22. Department of Mechanical Engineering, **MIT, Cambridge**, May 2013.
23. Department of Mechanical and Materials Engineering, **FIU, Miami**, May 2013.
24. Faculty of Mathematics and Natural Sciences, **University of Groningen, Groningen**, April 2013.
25. Department of Mechanical Engineering, **University of Texas, Dallas**, April 2013.
26. Department of Electrical Engineering and Computer Science, **Northwestern University**, April 2013.
27. Department of Electrical and Computer Engineering, **NYU Poly**, March 2013.
28. Department of Aerospace Engineering, **University of Michigan, Ann Arbor**, March 2013.
29. School of Electrical Engineering and Computer Science, **University of Newcastle, Australia**, March 2013.
30. Department of Mechanical Engineering, **Stanford University, Stanford**, February 2013.

EDITORSHIP

1. **Associate Editor** for Automatica. 2019–Current
2. **Associate Editor** for IEEE Transactions on Intelligent Transportation Systems. 2019–Current
3. **Guest Editor** for the International Journal of Adaptive Control and Signal Processing, special issue: Robust Adaptive Control: Legacies and Horizons.
4. **Guest Editor** for the Transportation Research Part C, special issue: Management of Future Traffic Systems.
5. **Associate Editor** for the 2020–2024 European Control Conferences.
6. **Associate Editor** for the 2018, 2019, 2021, 2022, 2023, 2024 IFAC Workshops on Time Delay Systems.
7. **Associate Editor** for the 2024 IFAC Symposium on Control of Transportation Systems.
8. **Associate Editor** for the 2018, 2019, 2020, 2022 IEEE Conferences on Intelligent Transportation Systems.
9. **Associate Editor** for the 2019, 2023 International Conference on System Theory, Control and Computing.

GRANTS
AWARDED

1. **PI:** “Micro-Macro Secure Control of Infinite-Dimensional Transport Systems,” *2022 European Research Council Consolidator Grant*; 01/12/ 2023–30/11/2028; Budget: 2.000.000 EUR.
2. **PI:** “Data-Driven Control of Delay Systems With Application to Connected and Automated Vehicles Platoons,” *Hellenic Foundation of Research and Innovation; Research Projects to Support Faculty Members & Researchers*; 01/02/ 2022–31/01/2025; Budget: 195.000 EUR.
3. **PI:** “Partial Differential Equation Model-Based Control of Traffic Flow,” *HORIZON2020, Marie Skłodowska-Curie Action, Individual Fellowship*, 2017–2019; Budget: 153.000 EUR.

GRANTS
SUBMITTED

1. **PI:** Proposal “C-NORA”, *2022 European Research Council Consolidator Grant*, 60 months (selected for funding).
2. **PI:** Proposal “CYMOVE”, *Horizon Europe; Safe, Resilient Transport and Smart Mobility Services for Passengers & Goods; RIA*, 36 months (not funded).
3. **PI:** Proposal “REFINE”, *Hellenic Foundation of Research and Innovation; 5th Call for Action “Science and Society” – “Always Strive for Excellence-Theodore Papazoglou”*, 24 months (not funded).
4. **PI:** Proposal “C-NORA”, *2021 European Research Council Consolidator Grant*, 60 months (Step 2 finalist, Panel PE7; not funded).
5. **PI:** Proposal “REFINE”, *Hellenic Foundation of Research and Innovation; 5th Call for Action “Science and Society” – “Always Strive for Excellence-Theodore Papazoglou”*, 24 months (not funded).
6. **PI:** Proposal “INSPIRA”, *2020 European Research Council Starting Grant*, 60 months (received Grade A; not funded due to budget limitations).

7. **Co-I:** “Smart integrated management system for electric vehicles charging stations,” *Co-funded by the Greek Ministry of Economy & Development and the European Union*, 30 months (not funded).
8. **Co-I:** “System for personalized management of electric vehicles charging/discharging,” *Co-funded by the Greek Ministry of Economy & Development and the European Union*, 15 months (not funded).

GRANTS
PREPARATION

1. **Participated in proposal writing as member of TUC’s team:** “Road Infrastructure Ready for Mixed Vehicle Traffic Flows,” *HORIZON2020, Research and Innovation Action, Automated Road Transport*, 2017–2020.
2. **Participated in proposal writing as member of TUC’s team:** “Synergetic Emergent Behavior in Cyber-Physical Systems of Systems,” *HORIZON2020, Research and Innovation Action, Information and Communication Technologies*, 2016 (not funded).

INDUSTRY
EXPERIENCE

Intern

Ford Research & Advanced Engineering, **July, 2012 - September, 2012**
Ford Motor Company, Dearborn, USA

PDE-Based Control of the Oxygen Storage Level in Three-Way Catalytic Converters: Further Results and Experimental Validation.

Group director: Dr. Mrdjan Jankovic.

Intern

Ford Research & Advanced Engineering, **July, 2011 - September, 2011**
Ford Motor Company, Dearborn, USA

PDE-Based Control of the Oxygen Storage Level in Three-Way Catalytic Converters.

Group director: Dr. Mrdjan Jankovic.

TEACHING
EXPERIENCE

1. **Instructor** **Spring 2019–2024**
Technical University of Crete
Dep. of Electrical & Computer Engineering
SYS 603: “Nonlinear Systems” (graduate)
2. **Instructor** **Fall 2015–2023**
Technical University of Crete
Dep. of Electrical & Computer Engineering
SYS 401/411: “Linear Systems” (undergraduate)
3. **Instructor** **Spring 2016–2023**
Technical University of Crete
Dep. of Electrical & Computer Engineering
SYS 402: “Control Theory With Applications”/SYS 201: “Control Systems” (undergraduate)
4. **Co-Instructor** **January 2014 - May 2014**
University of California, Berkeley
Departments of Civil & Environmental
Engineering and Electrical Engineering &
Computer Sciences

CE 291F, ME 236, EE 291: “Control and Optimization of Distributed Parameters Systems”. Instructor: Prof. Alexandre Bayen

5. Teaching Assistant

University of California, San Diego **September 2011 - December 2011**
Department of Mechanical and Aerospace
Engineering
MAE 287: “Control of Distributed Parameters Systems”. Instructor: Prof. Miroslav Krstic

6. Teaching Assistant

University of California, San Diego **July 2009 - December 2009**
Department of Mechanical and Aerospace
Engineering
MAE 143A: “Signals and Systems”. Instructor: Prof. Miroslav Krstic

7. Teaching Assistant

National Technical University of Athens **September 2006 - January 2007**
Department of Electrical and Computer
Engineering
“Linear Control”. Instructor: Prof. Paraskevas Paraskevopoulos.

8. Teaching Assistant

Agricultural University of Athens **February 2006 - June 2006**
Department of Natural Resources Management
and Agricultural Engineering
“Sensor and Measurement Devices”. Instructor: Prof. Kostas Arvanitis.

**SUPERVISION
OF STUDENTS
AND POSTDOCS**

1. Nikoletta Hadjihambi, PhD, Technical University of Crete, Greece.
2. Shantanu Singh, Postdoc, Technical University of Crete, Greece.
3. Florent Koudohode, Postdoc, Technical University of Crete, Greece.
4. Jukka-Pekka Humaloja, Postdoc, Technical University of Crete, Greece.
5. Andreas Katsanikakis, PhD, Technical University of Crete, Greece.
6. Panagiotis Karafotis, Postdoc, Technical University of Crete, Greece.
Topic: “Data-driven control of delay systems with application to connected and automated vehicles’ platoons”.
7. Amirhossein Samii, PhD, Technical University of Crete, Greece.
Topic: “Data-driven control of delay systems with application to connected and automated vehicles’ platoons”.
8. Nikos Intas, Undergraduate, Technical University of Crete, Greece.
Topic: “Adaptive predictor-feedback control of SIRD epidemiological model with uncertain parameters and input delay”.
9. Triantafyllia Sampani, Undergraduate, Technical University of Crete, Greece.
Topic: “1-D Cardiovascular systems flow from a vehicular traffic flow viewpoint”.
10. Stavros Katsaras, Undergraduate, Technical University of Crete, Greece.
Topic: “Modeling and parameters identification of age-dependent epidemics spreading dynamic systems, under vaccination and non-pharmaceutical control strategies”.

11. Manolis Proestakis, Undergraduate, Technical University of Crete, Greece.
Topic: “Predictor-feedback control of traffic flow at distant bottlenecks”.
12. Michalis Fanouriadis, Undergraduate, Technical University of Crete, Greece.
Topic: “PLC-based control and operation of a pumping station”.
13. Argiris Tigas, Undergraduate, Technical University of Crete, Greece.
Topic: “Dryer temperature control for drywall production”.
Currently: Control engineer, KNAUF, Greece.
14. Farzam Tajdari, PhD, Aalto University, Finland.
Topic: “Integrated ramp metering and lane-changing feedback control at motorway bottlenecks”. **(Led so far to 1 conference paper.)**
15. Vasilis Markantonakis, MS, Technical University of Crete, Greece.
Topic: “Development of software for implementation of multi-lane traffic estimation methodologies.”
Currently: PhD student, Technical University of Crete, Greece.
16. Alexandros Tzananakis, Undergraduate, Technical University of Crete, Greece.
Topic: “Energy efficient control of bipedal robot locomotion in dynamic environments.”
Currently: PhD student, ETH, Switzerland.
17. Sofia Papadopoulou, MS, Technical University of Crete, Greece.
Topic: “Microsimulation-based testing of multi-lane traffic estimation methodologies.” **(Led so far to 1 journal and 1 conference papers.)**
18. Antonis Georgantas, Undergraduate, Technical University of Crete, Greece.
Topic: “Traffic flow optimization via lane-changing control.”
Currently: PhD student, KIOS Research and Innovation Center of Excellence, Cyprus.
19. Iris Philopoulou, Undergraduate, Technical University of Crete, Greece.
Topic: “Real-data testing of multi-lane traffic estimation methodologies.”
Currently: MS student, National Technical University of Athens, Greece.
20. Markos Fountoulakis, MS, Technical University of Crete, Greece.
“Microscopic simulation-based testing of highway traffic state estimation algorithms in the presence of connected/automated vehicles”. **(Led so far to 1 journal and 1 conference papers.)**
21. Mamadou Diagne, Postdoctoral, University of California, San Diego, USA.
“Predictor feedback control of extruders”. **(Led so far to 3 journal and 3 conference papers.)**
Currently: Assistant Professor, Rensselaer Polytechnic Institute, USA.
22. Pierre-Olivier Lamare, Graduate, CNRS, Grenoble, France.
“Control of 2×2 hyperbolic systems with application to the Aw-Rascle traffic model”. **(Led so far to 1 journal and 1 conference papers.)**
Currently: Postdoctoral Researcher, Mines ParisTech, France.
23. Kevin Weekly, Graduate, University of California, Berkeley, USA.
“PDE-Based modeling and estimation of human occupancy in smart buildings”. **(Led so far to 2 journal and 2 conference papers.)**
Currently: Research Scientist, Fitbit, USA.

24. Ming Jin, Graduate, University of California, Berkeley, USA.
 “Data-driven PDE model-based occupancy detection using indoor CO2 concentration”. **(Led so far to 2 journal and 1 conference papers.)**
Currently: Assistant Professor, Virginia Tech, USA.
25. Mandy Huo, Undergraduate, University of California, Berkeley, USA.
 Topic: “Frequency domain representation of hyperbolic systems.”
Currently: PhD student, University of California, Berkeley, USA.
26. Anton Pyrkin, Graduate, ITMO University, Saint Petersburg, Russia.
 “Disturbance rejection for input delay systems”. **(2 conference papers.)**
Currently: Associate Professor and Dean of Faculty of Control Systems and Industrial Robotics, ITMO University, Saint Petersburg, Russia.

PHD
COMMITTEES

1. Salim Zekraoui (Centrale Lille, CNRS CRISAL); Committee member and PhD thesis reviewer.
 PhD thesis: “Finite-time control and estimation of some classes of PDEs”.
2. SiJia Kong (Automatic Control and Systems Center, MINES ParisTech); Committee member and PhD thesis reviewer.
 PhD thesis: “Prediction-based control of dynamical systems with stochastic input delay”.
3. Liudmila Tumash (Ecole Doctorale for Electronics, Power Systems, Automatic Control and Signal Processing; University Grenoble Alpes); Committee member and PhD thesis reviewer.
 PhD thesis: “Traffic control in large-scale urban networks”.
4. Kallirroï Porfyri (Department of Production Engineering & Management, TUC).
 PhD thesis: “Macroscopic traffic flow modeling in the presence of Vehicle Automation and Communication Systems”.

INSTITUTIONAL
RESPONSIBILITIES

1. Led and implement the first hiring process for non-Greek graduate students and postdocs in ECE Department, Technical University of Crete, Greece.
2. Member of the technical council, Technical University of Crete, Greece.
3. Member of the ECE internships committee, Technical University of Crete, Greece.
4. Member of the ECE Dean’s Advisory Board (2021–2022), Technical University of Crete, Greece.
5. Graduate admissions committee member (2021–2022), ECE, Technical University of Crete, Greece.
6. Organizer of ECE Online Seminar Series (Spring/Summer 2021), Technical University of Crete, Greece.
7. Member of PhD theses examining committees, Technical University of Crete, Greece.
8. Member of undergraduate diploma theses examining committees, Technical University of Crete, Greece.

9. Committee member for equipment (including electric vehicles) supply, Technical University of Crete, Greece.
10. Undergraduate studies academic advisor, Technical University of Crete, Greece.

CONFERENCE
& WORKSHOP
ORGANIZATION

1. **Registration Chair** for the 2025 European Control Conference.
2. **Founding Organizer** for the 1st Symposium on Management of Future Traffic Systems. [link](#)
3. **Main Organizer** of workshop *Traffic Flow Control via PDE Techniques* organized within the 2018 IEEE Conference on Decision and Control. [link](#)

SCIENTIFIC &
PROGRAM
COMMITTEES

1. Member of the IPC of 2023 IEEE Intelligent Transportation Systems Conference.
2. Member of the ISC of the 2016, 2018, 2020, 2022, 2024 Symposia on Management of Future Motorway and Urban Traffic Systems.
3. Member of the IPC of 2021, 2024 IFAC Symposium on Control in Transportation Systems.
4. Member of the IPC of 2019, 2021, 2022, 2023, 2024 IFAC Workshops on Time-Delay Systems.

INVITED
SESSIONS
ORGANIZER

1. *Time Delay in Vehicle and Traffic Systems*, 2022 IFAC Workshop on Time-Delay Systems.
2. *Traffic control via connected and automated vehicles*, 2021 IEEE Conference on Decision and Control.
3. *Control for Large Scale Traffic Networks*, 2019 IEEE Conference on Decision and Control.

PROFESSIONAL
ACTIVITIES

1. Reviewer for research project proposal for German Research Foundation, 2023.
2. Books and Paper Reviewing.
Book Series: Springer Briefs Series in Control, Automation, and Robotics. Birkhauser. SIAM. Springer.
Journals: IEEE Transactions on Automatic Control. Automatica. Systems and Control Letters. IEEE Transactions on Control Systems Technology. European Journal on Control. International Journal of Adaptive Control and Signal Processing. International Journal of Robust and Nonlinear Control. IMA Journal on Mathematical Control and Information. Signal Processing. Journal of the Franklin Institute. Transportation Research Part C. IEEE Transactions on Intelligent Transportation Systems. Transportation Research Part B. International Journal of Control. SIAM Journal on Control and Optimization. IET Control Theory & Applications. AIMS Journal: Mathematical Control & Related Fields. The Canadian Journal of Chemical Engineering. Journal of Optimization Theory & Applications. International Journal of Systems Science. Kybernetika. Physica Part A.

Conferences: IEEE Conference on Decision and Control 2010–2023. American Control Conference 2010–2022. European Control Conference 2014–2023. IFAC NOLCOS 2014. IFAC World Congress 2017, 2020. IEEE Multi-Conference on Systems and Control 2016. IEEE Conference on Intelligent Transportation Systems 2016–2022.

3. **Member** of the **IEEE Control Systems Society Technical Committee** on *Distributed Parameter Systems*. 2019–Current
4. **Member** of the **IFAC Technical Committee** on *Transportation Systems*. 2019–Current
5. **Member** of the **IFAC Technical Committee** on *Distributed Parameter Systems*. 2019–Current

PROGRAMMING • Matlab, Simulink