CURRICULUM VITAE

Kirsten A. Morris
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RESEARCH INTERESTS

Controller and estimator design for partial differential equations, optimal sensor and actuator placement, dissipative systems, smart materials.

APPOINTMENTS

2018-2019	Visiting scholar	Institut de Mathématiques de Bordeaux, Bordeaux
2003-present	Professor	Dept. of Applied Mathematics, University of Waterloo (cross-appointment Mechanical and Mechatronics Engineering)
2016-2016	Long-term visitor	Institute for Mathematics & Applications, Univ. of Minnesota
2012-2014	Assoc. chair (Grad.)	Dept. of Applied Mathematics, University of Waterloo
2005-2008	Assoc. dean (Grad.&Research)	Math. Faculty, University of Waterloo
2003-2004	Visiting member	Fields Institute
2000-2002	Assoc. chair (U.grad)	Dept. of Applied Mathematics, University of Waterloo
1997-1998	Visiting professor	Dept. of Mathematics, University of Guelph
1995-2003	Associate professor	Dept. of Applied Mathematics, University of Waterloo
1993-1993	Visiting member	Fields Institute, Toronto, Ontario, Canada
1990-1992	Scientific consultant	ICASE, NASA Langley Research Center,
1990-1995	Assistant professor	Dept. of Applied Mathematics, University of Waterloo
1989-1990	Staff scientist	ICASE, NASA Langley Research Center
1984-1985	Engineer	CAE Electronics Ltd.

EDUCATION

Ph.D., Elec. Eng., 1989, Faculty of Engineering, University of Waterloo, Waterloo, Ontario, Canada
Thesis: *Finite-Dimensional Control of Infinite-Dimensional Systems*
Supervisor: Prof. M. Vidyasagar

M.Math, App. Math., 1984, Faculty of Mathematics, University of Waterloo, Waterloo, Ontario, Canada
Thesis: *Time-Optimal Control of Systems Governed by Partial Differential Equations*
Supervisor: Prof. B. Forte

B.Sc. (Hons.), Math. & Eng., 1982, Faculty of Applied Science, Queen's University, Kingston, Ontario, Canada

AWARDS

SIAM Fellow; IEEE Fellow; Faculty of Mathematics Research Chair, 2021- ; IEEE Control Systems Society Distinguished Member Award 2020; International Federation of Automatic Control (IFAC) Pavel J. Nowacki Distinguished Lecturer 2021-2023; Outstanding Performance Award University of Waterloo, 2006, 2013, 2020; Faculty of Mathematics Fellowship, 2004-2007.

Memberships

Institute for Electrical and Electronic Engineers (IEEE), Society of Industrial and Applied Mathematicians (SIAM); Waterloo Institute for Computer Research, Waterloo Centre for Automotive Research.

SERVICE

Boards

- IEEE Future Directions Committee
- Chair, SIAM Control & Systems Activity Group, 2018-2019, Vice-chair, 2016-2017
- Vice-President, Technical Activities (2015-2016) Vice-President, Membership (2013-2014), Board of Governors (2010-2016), IEEE Control Systems Society
- Editor, Asian Journal of Control, 2019-present
- Advising editor, 2021- , Associate Editor 2016-2020, *Mathematics of Control, Signals and Systems*
- Associate Editor, *SIAM Journal on Control and Optimization*, 2010-2013, 2016-
- Associate Editor, *IEEE Trans. on Automatic Control*, 2008-2013
- Board of Governors, IEEE Control Systems Society, 2010-2016
- Editorial Board, SIAM book series *Advances in Design & Control* , 2005-
- Editor, book reviews, *IEEE Control Systems Magazine*, 2005
- Associate Editor, IEEE Control Systems Society Conference Editorial Board, 2000-2007

Conference Organization

- organized (with L. Gruene, Bayreuth) *Mini-Workshop on Analysis of Data-driven Optimal Control,* Oberwolfach, Germany, May 2021 (funded by Oberwolfach)
- successful proposal (with A. Ilchmann & T. Reis, Hamburg and M. Embree, Virginia Tech) *Workshop on Partial Differential Algebraic Equations*, Luminy, France, November 2020 (cancelled due to pandemic)
- Program co-chair, *3rd IFAC Workshop on Control of Partial Differential Equations*, Oaxaca, May 2019
- Co-organizer, *Sensor Location in Distributed Parameter Systems*, Institute for Mathematics & Applications, September 2017
- Co-organizer, *Women in Control: New Trends in Infinite Dimensions*, Banff, July 2017
- Co-organizer, *Control of Distributed Parameter Systems,* Institute for Mathematics & Applications, March 2016
- Co-organizer, *International Workshop on Controller Design of Infinite-Dimensional Systems*, Waterloo, July, 2005 (funded by the Fields Institute and University of Waterloo)

- International Program Committees: *IFAC Workshop Lagrangian and Hamiltonian Methods for Non Linear Control* (2016,2018), *IFAC workshop on Control of Systems Governed by Partial Differential Equations* (2013,2016), *6th IFAC Symposium on System Structure and Control* (2010,2016),*International Symposium on the Mathematical Theory of Networks and Systems* (2012,2014, 2016), *3rd International Conference on Control and Optimization with Industrial Applications* (2011),*IEEE Multi-Conference on Systems & Control* (2010,2011), *Joint IEEE Conference on Decision and Control/ European Control Conference* (2005)

- Scientific Committee, *Workshop on Control of Distributed Parameter Systems*, Bordeaux, 2017

- Steering Committee, *International Symposium on Mathematical Theory of Networks and Systems*, 2016-

- Steering Committee, *Conference on Distributed Parameter Systems,* 2005- , chair since 2020

- Organizing Committees: *SIAM Conference on Control and its Applications* (2015), *8th Conference on Differential Equations and Dynamical Systems* (2010), *SIAM Conference on Control and Applications* (2005,2007)

Other Service

- CAIMS-Fields Industrial Research Prize Committee member, 2018-

- IEEE Control Systems Award Committee, 2019-

- Chair, CSS George S. Axelby Best Paper Prize, 2017-

- Chair, SIAM Control & Systems Theory Prize, 2016

- IFAC Technical Committee on Partial Differential Equations 2011-

- IEEE Technical Committee on Distributed Parameter Systems 2009-

- Panelist "Future Directions in Control and Systems Theory", SIAM Conference on Control and its Applications, 2007

- Selection Committee, *SIAM Control & Systems Theory Prize*, 2005

INVITED SEMINARS (since 2009)

(Expenses provided by inviting organization)

- *Optimal Controller and Actuator Design for Partial Differential Equations,* plenary lecture, Canadian Mathematical Society Winter Meeting, Toronto, Canada, Dec. 6, 2019 (*)

- *short course on Controller Design for Partial Differential Equations,* Canadian Mathematical Society Winter Meeting, Toronto, Canada, Dec. 6, 2019

- *Concurrent optimal actuator and controller design for partial differential equations,* Third AFOSR Monterey Workshop on Computational Issues in Nonlinear Control, Monterey, USA, Oct. 7 , 2019.

- *Optimal sensor/estimator design for distributed parameter systems,* 3rd IFAC Workshop on Control of Partial Differential Equations, Oaxaca, Mexico, May 24, 2019

- *Issues in estimator and sensor design for PDEs,* Workshop on Analysis, Control and Inverse Problems for PDEs, Naples, Italy, Nov. 28, 2018.

- *Optimal sensor location,* 2nd Workshop on Stability and Control of Infinite-Dimensional Systems (SCINDIS-2018), Wurzburg, Germany, Oct. 11, 2018.

- *Actuators and sensors in control of distributed parameter systems*, Institute for Systems Research, University of Maryland, USA, October 19, 2017.

- *Optimal actuator/sensor location in distributed parameter systems*, Workshop on Emerging Applications in Control and Systems Theory, University of Texas (Dallas), September 28, 2017.

- *Optimal sensor design*, Workshop on Control of Distributed Parameter Systems, Bordeaux, France, July 5, 2017.

- *The role of sensors and actuators in control of infinite-dimensional systems*, KAUST, Saudi Arabia, April 19, 2017.

- *The role of actuators and sensors in control of distributed parameter systems*, University of Groningen, Netherlands, May 17, 2016.

- *Using approximations in controller synthesis for systems modeled by partial differential equations*, Institute for Mathematics and Applications, Minneapolis, USA, Feb. 4, 2016.

- *Sensors & actuators in control of distributed parameter systems*, 3 week series of lectures and visits in China, at Tsinghua University, Chinese Academy of Science, Xi'an University, Taiyuan University, Beijing Institute of Technology, November 2015.

- *Control of distributed parameter systems*, keynote talk, Recent developments on approximation methods for controlled evolution equations, Oberwolfach Research Institute, Germany, November 1, 2015.

- *Optimal Hardware Placement for Control*, Univ. of Florida, Gainesville, U.S.A., October 23, 2015.

- *Zero dynamics of port-Hamiltonian systems*, Univ. of Twente, Netherlands, September 25, 2015.

- *The Role of Actuators and Sensors in Control of Partial Differential Equations,* Sorbonne Université (Paris VI), Paris, France, May 22, 2015.

- *Sensors and Actuators in Control of Distributed Parameter Systems*, colloquium talk, University of Nevada, Reno, U.S.A., April 23, 2015.

- *Sensors and Actuators in Control of Distributed Parameter Systems*, keynote talk, Workshop on Control Systems and Identification Problems, Valparaiso, Chile, January 12-16, 2015.

- *Optimal Actuator/Sensor Placement*, plenary talk, 21st International Symposium on Mathematical Theory of Networks and Systems, Groningen, Netherlands, July 10, 2014.

- *Control of Infinite-Dimensional Systems: Overview*, keynote talk, Workshop on Port-Hamiltonian Systems: Approximation, Theory and Practice, Leiden, Netherlands, March 24, 2014.

- *Optimal Actuator Location*, Mathematics Department Colloquium, University of Groningen, Groningen, Netherlands, October 1, 2013.

- *Optimal Actuator Location*, plenary talk, IFAC Conference on Control of Systems Modelled by Partial Differential Equations, Paris, France, September 26, 2013.

- *Second-Order Systems with Acceleration Measurements*, Mathematics Department Colloquium, University of Wuppertal, Wuppertal, Germany, May 16, 2013.

- *Control of Systems Governed by Partial Differential Equations*, Mathematics Department Colloquium, University of Alabama, Birmingham, U.S.A. April 5, 2013.

- *Optimal Actuator Location*, Fields Institute Industrial Optimization Colloquium, Toronto, Canada, February, 2012.

- *Computation of Optimal Actuator Locations*, 2nd Workshop on Computational Issues in Nonlinear Control, Monterey, U.S.A., November, 2011.

- H_∞ *-optimal Actuator/sensor Locations* , International Workshop on Control of Distributed Parameter Systems, Wuppertal, Germany, July, 2011

- *Controller Design for Infinite-dimensional Systems*, Workshop on Quantum Control, Banff International Research Station, April, 2011.

- *What is Control?*, Applied Mathematics Colloquium, University of Guelph, March , 2011.

- *Acceleration Measurements*, Virginia Polytechnic Institute and State University, Blacksburg, USA, November, 2010

- *Controller Design for Systems Modelled by Partial Differential Equations*, University of Toronto, Toronto, Canada, February, 2010

- *Controller Design for Systems Modelled by Partial Differential Equations*, SIAM Conf. on Control & Applications plenary address, Denver, U.S.A., July 2009

- *Optimal Actuator Location*, University of Paderborn, Paderborn, Germany, May 2009

PATENT

1. A. Khajepour, K.A. Morris and S. Behjat, *Stroke Amplification in Inchworm Mechanisms Using Hydraulic Booster*, U.S. Patent U.S. Patent 7,218,035, 2007.

PUBLICATIONS

Books

2. K. A. Morris, *An Introduction to Controller Design for Distributed Parameter Systems*, Springer, 2020.

3. K.A. Morris, *An Introduction to Feedback Controller Design*, Harcourt-Brace Ltd., 2001.

4. K.A. Morris, ed., *Control of Flexible Structures,* AMS, 1993.

Refereed Journal Publications

5. M.S. Edalatzadeh, D. Kalise, K. A. Morris, K. Sturm "Optimal Actuator Design for Vibration Control Based on LQR Performance and Shape Calculus," *IEEE Control and Systems Letters*, vol.6, pg.1334-1339, 2022.

6. K. A. Morris,"Optimal Output Estimation for Infinite-dimensional Systems with Disturbances", *Systems and Control Letters*, vol. 146, 2020.

7. H. J. Zwart, K. A. Morris and O. Iftime, "Approximation of the linear-quadratic optimal control of asymptotically stabilizable systems", *Systems and Control Letters*, vol. 146, 2020.

8. Carolina Bergeling, Kirsten Morris and Anders Rantzer, "Closed-form H-infinity optimal control for a class of infinite-dimensional systems", *Automatica,* vol. 117, 2020.

9. B. J. Jacob, K. A. Morris and H. J. Zwart, "Zero Dynamics for Waves on Networks", *Automatica,* vol. 103, pg. 310-321, 2019.

10. A. O. Ozer and K. A. Morris, "Modeling and stabilization of current-controlled piezoelectric beams with dynamic electromagnetic field", *ESAIM: Control, Optimization and Calculus of Variations*, February, 2020.

11. J. Auriol, K. A. Morris and F. Di Meglio, "Late-lumping backstepping control of partial differential equations", *Automatica,* vol. 100, pg. 247-259, 2019.

12. M. S. Edalatzadeh and K. A. Morris, "Stability and Well-posedness of Nonlinear Railway Track Model", *IEEE Control and Systems Letters*, vol. 3, Issue 1, 2019.

13. M. S. Edalatzadeh and K. A. Morris, "Optimal Actuator Design for Semi-linear Systems", *SIAM Jour. of Control and Optimization*, vol. 57, no. 4, pg. 2992-3020, 2019.

14. S. Afshar, K. A. Morris and A. Khajepour, "State of charge estimation using an adaptive EKF-based filter", *IEEE Trans. on Control Systems Technology*, vol. 27-5, pg.1907-1923, 2019.

15. S. Afshar, K. A. Morris and A. Khajepour, "A modified sliding-mode observer design with application to the diffusion equation", *International Journal of Control*, vol. 92-10, pg. 2369-2382, 2019.

16. Minxin Zhang and Kirsten Morris, "Sensor Choice for Minimum Error Variance Estimation", *IEEE Trans. on Automatic Control*, vol. 63-2, pg. 315-330, 2018.

17. R. al Jamal and K. A. Morris, "Linearized stability of partial differential equations with application to stabilization of the Kuramoto-Sivashinsky equation", *SIAM Jour. on Control and Optimization*, vol. 56, pg. 120-147, 2018.

18. A. N. F. Chow and K. A. Morris, "Control of Hysteresis in the Landau–Lifshitz Equation", *Automatica*, vol. 67, pg. 200-204, 2016.

19. A. Shum, K. A. Morris and A. Khajepour, "Convergence Rate for the Ordered Upwind Method", *SIAM Jour. on Scientific Computing*, Vol. 68, No. 3, 2016.

20. B. Jacob and K. A. Morris, "Root Locii for Systems Defined on Hilbert Spaces", *IEEE Trans. on Auto. Control*, Vol. 61, pg. 116-128, 2016.

21. S. D Yang and K. A. Morris, "Comparison of Actuator Placement Criteria for Control of Structural Vibrations", *Jour. of Sound and Vibration* Vol. 353, pg. 1-18, 2015.

22. A. Shum, K. A. Morris and A. Khajepour, "Direction-Dependent Optimal Path Planning for Autonomous Vehicles," *Jour. of Robotics and Autonomous Systems*, Vol. 70, pg. 202-214, 2015.

23. B. Jacob, K. A. Morris and H. Zwart, C_0-semigroups for hyperbolic partial differential equations on a one-dimensional spatial domain, *Jour. of Evolution Equations*,Vol. 15, No. 2, pg. 493-502, 2015.

24. K.A. Morris, M. Demetriou and S.D. Yang, "Using H_2-control performance metrics for infinite-dimensional systems", *IEEE Trans. on Auto. Control*, Vol. 60, No. 2, pg. 450 - 462, 2015.

25. K. A. Morris and A. O. Ozer, "Modeling and stabilizability of voltage-actuated piezoelectric beams with magnetic effects", *SIAM Jour. on Control*, Vol. 52, No. 4, pg. 2371-2398, 2014.

26. D. Kasinathan and K. A. Morris and S. D. Yang, "Solution of large descriptor H_∞-algebraic Riccati equations", *Jour. of Computational Science*, Vol. 5, No. 3, pg. 517-526, 2014.

27. D. Kasinathan and K. A. Morris, "H_∞-optimal actuator location", *IEEE Trans. on Auto. Control*, vol. 58, no. 10, pg. 2522 - 2535, 2013.

28. N. Darivandi, K. A. Morris and A. Khajepour, "An algorithm for LQ optimal actuator location", *Smart Materials and Structures,* vol. 22, no. 3, 2013.

29. K. A. Morris, "What is Hysteresis?", *Applied Mechanics Reviews*, vol. 64, no. 5, 2012.

30. B. Jacob and K. A. Morris, "Second-Order Systems with Acceleration Measurements", *IEEE Trans. on Auto. Control*, vol. 57, pg. 690-700, 2012.

31. K. A. Morris, "Linear-Quadratic Optimal Actuator Location", *IEEE Trans. on Auto. Control*, vol. 56, pg. 113 - 124, 2011.

32. K.A. Morris and R. E. Rebarber, "Zeros of SISO Infinite-Dimensional Systems", *International Journal of Control*, vol. 83, no. 12, pg. 2573-2579, 2010.

33. S. Valadkhan, K. A. Morris and A. Shum, "A new load-dependent hysteresis model for magnetostrictive materials", *Smart Materials and Structures*, vol. 19, 125003, 2010.

34. S. Valadkhan, K. A. Morris and A. Khajepour, "Stability and robust position control of hysteretic systems", *Robust & Nonlinear Control*, vol. 20, pg. 460-471, 2010.

35. K.A. Morris and C. Navasca, "Approximation of linear quadratic feedback control for partial differential equations", *Computational Optimization and Applications*, vol. 46, pg. 93-111, 2010.

36. R.B. Gorbet, K.A. Morris and R.C. Chau, "Mechanism of bandwidth improvement in passively cooled SMA position actuators", *Smart Materials and Structures*, vol. 18, no. 9, 095013 (9 pg.), 2009.

37. R. F. Curtain and K.A. Morris, "Transfer Functions of Distributed Parameter Systems", *Automatica*, vol. 45, no. 5, pg. 1101-1116, 2009.

38. S. Valadkhan, K. A. Morris and A. Khajepour, "A Review and Comparison of Hysteresis Models for Magnetostrictive Materials", *Jour. of Intelligent Materials and Smart Structures*, vol. 20, no. 2, 2009, pp. 131-142.

39. S. A. Campbell, S. Crawford and K.A. Morris, "Friction and the Inverted Pendulum Stabilization Problem", *ASME Jour. of Dynamic Systems, Measurement and Control*, Vol. 30, No. 5, pg. 054502-1–054502-7, 2008.

40. K.A. Morris and R. E. Rebarber, "Feedback Invariance of SISO Infinite-Dimensional Systems", *Mathematics of Control, Signals and Systems*, Vol. 19, pg. 313-335 2007.

41. S. Valadkhan, K. A. Morris and A. Khajepour, "Passivity of Magnetostrictive Materials", *SIAM Jour. on Applied Mathematics*, Vol. 67, No. 3, 2007, pp. 667-686.

42. B. Jacob, K.A. Morris and C. Trunk, "Minimum-Phase Infinite-Dimensional Second-Order Systems", *IEEE Trans. on Auto. Control*, Vol. 52, No. 9, pg. 1654-1665, 2007.

43. B. Jacob, K. A. Morris and C. Trunk, "Minimum-Phase Second-Order Systems and the Spectrum of the Semigroup Generator", *Proc. Appl. Math. Mech.*, Vol. 6, pg. 631-632, 2006.

44. M. Landry, S.A. Campbell, K.A. Morris and C. Aguilar, "Dynamics of an Inverted Pendulum with Delayed Feedback", *SIAM Jour. on Applied Dynamical Systems*, *SIAM Jour. on App. Dyn. Sys.*, vol. 4, no. 2 pg. 333-351, 2005.

45. R.B. Gorbet and K.A. Morris "Closed-Loop Position Control of Preisach Hystereses", *Jour. of Intelligent Materials and Smart Structures*, vol. 14, no. 8, pg. 473-538, 2003.

46. J.R. Grad and K.A. Morris, "Calculation of Achievable Broadband Noise Reduction using Approximations", *Dyn. Contin. Discrete Impuls. Syst. Ser. B Appl. Algorithms*, supl., pg. 438-443, 2003.

47. B.J. Zimmer, S.P. Lipshitz, K.A. Morris, J. Vanderkooy and E.E. Obasi, "An Improved Acoustic Model for Active Noise Control in a Duct", *ASME Journal of Dynamic Systems, Measurement and Control*, vol. 125, no. 3, pg. 382-395, 2003.

48. A. Cheng and K.A. Morris, "Well-Posedness of Boundary Control Systems", *SIAM Jour. on Control and Optimization*, vol. 42, no. 4, pg. 1244-1265, 2003.

49. K.A. Morris, "H_∞ Output Feedback Control of Infinite-Dimensional Systems via Approximation", *Systems and Control Letters*, vol. 44, pg. 211-217, 2001.

50. R.B. Gorbet, K.A. Morris and D. Wang, "Passivity-Based Stability and Control of Hysteresis in Smart Actuators", *Special Issue on Dynamics and Control of Smart Structures, IEEE Journal on Control Systems Technology*, vol. 9, No. 1, pg. 5-16, 2001.

51. N. Baddour and K.A. Morris "A New Full Car Model", *Trans. of the Canadian Society of Mechanical Engineering*, Vol. 24, No. 3&4, pp 493-514, 2000.

52. K.A. Morris, "Justification of Input/Output Methods for Systems with Unbounded Control and Observation", *IEEE Trans. on Automatic Control*, Vol. 44, No. 1, pg 81-85, 1999.

53. K.A. Morris, "Noise Reduction Achievable by Point Control", *ASME Journal on Dynamic Systems, Measurement and Control*, Vol. 120, No. 2, 1998, pg. 216-223.

54. K. Ito and K.A. Morris, "An Approximation Theory for Solutions to Operator Riccati Equations for H_∞ Control", *SIAM Jour. on Control and Optimization,* Vol 36, No. 1, Jan. 1998, pg. 82-99.

55. A. Khajepour, M.F. Golnaraghi and K.A. Morris, "Modal Coupling Controller Design Using Normal Form Methods I: Dynamics", *Journal of Sound and Vibration*, vol. 205, 1997, pg. 657-670.

56. A. Khajepour, M.F. Golnaraghi and K.A. Morris, "Modal Coupling Controller Design Using Normal Form Methods II: Control", *Journal of Sound and Vibration*, vol. 205, 1997, pg. 671-688.

57. A. Khajepour, M.F. Golnaraghi and K. A. Morris, "Application of Center Manifold Theory to Regulation of a Flexible Beam", *Journal of Vibration and Acoustics*, Vol. 119, 1997, pg. 158-165.

58. J.R. Grad and K.A. Morris, "Solving the Linear Quadratic Control Problem for Infinite-Dimensional Systems", *Computers and Mathematics with Applications*, Vol. 32, No. 9, 1996, pg. 99-119.

59. K.A. Morris and K.J. Taylor, "A Variational Calculus Approach to the Modelling of Flexible Manipulators", *SIAM Review*, Vol. 38, No. 2, 1996, pg. 294-305.

60. K.A. Morris, "State Feedback and Estimation of Well-Posed Systems", *Mathematics of Control, Signals and Systems*, Vol. 7, 1994, pg. 351-388.

61. K.A. Morris, "Design of Finite-Dimensional Controllers for Infinite-Dimensional Systems by Approximation", *Journal of Mathematical Systems, Estimation and Control,* Vol. 4, No. 2, 1994, pg. 1-30.

62. K.A. Morris, "Convergence of Controllers Designed Using State-Space Techniques", *IEEE Trans. on Automatic Control*, Vol. 39, No. 10, 1994, pg. 2100-2104.

63. K.A. Morris and J.N. Juang, "Dissipative Controller Designs for Second-Order Dynamic Systems", *IEEE Trans. on Automatic Control*, Vol. 39, No. 5, 1994, pg. 1056-1063.

64. H.T. Banks and K.A. Morris, "Input-Output Stability of Accelerometer Control Systems", *Control: Theory and Advanced Technology,* Vol. 10, No. 1, 1994, pg. 1-17.

65. K.A. Morris and M. Vidyasagar, "A Comparison of Different Models for Beam Vibrations from the Standpoint of Controller Design", *ASME Journal of Dynamic Systems, Measurement and Control,* September, 1990, Vol. 112, pg. 349-356.

Invited Contributions to Books

66. K.A. Morris, The Role of Sensor and Actuator Models in Control of Distributed Parameter Systems, *Emerging Applications in Control and Systems Theory,* ed. P. Misra and S. Yurkovich, Springer, 2017.

67. K. A. Morris, "Control of Systems Governed by Partial Differential Equations", *The Control Handbook,* ed. W. S. Levine, CRC Press, 2010.

68. S. Valadkhan, K. A. Morris and A. Khajepour, "Robust Control of Smart Material Based Systems", *Lecture Notes in Control and Information Science*, ed. Vincent Blondel, Stephen Boyd, Hidenori Kimura, Springer-Verlag, pg. 249-262, 2008.

69. K.A. Morris and C. Navasca, "Solution of Algebraic Riccati Equations Arising in Solution of Partial Differential Equations", *Control and Boundary Analysis*, ed. J. Cagnol and J.-P. Zolesio, Marcel Dekker, 2004, pg. 259-281.

70. R.B. Gorbet, K.A. Morris and D.W.L. Wang, "Control of Hysteretic Systems: A State-space Approach", *Learning, Control and Hybrid Systems*, ed. Yutaka Yamamoto and Shinji Hara, Springer-Verlag, 1999, pg. 432-451.

71. A. Khajepour, M.F. Golnaraghi and K.A. Morris, "Internal Resonance Controller Design Using Normal Forms", in *Nonlinear and Stochastic Dynamics*, ed. A.K. Bajaj, N.S. Namachchivaya and R.A. Ibrahim, ASME, 1994, pg. 143-150.

72. K.A. Morris, "Perturbation of Well-Posed Systems by State-Feedback", in *Identification and Control of Partial Differential Equations,* ed. H.T. Banks, R. Fabiano and K. Ito, SIAM, 1993, pg. 141-154.

73. K.A. Morris, "The Well-Posedness of Accelerometer Control Systems", in *Analysis and Optimization of Systems: State and Frequency Domain Approaches for Infinite-Dimensional Systems,* ed. R. F. Curtain, Springer-Verlag, 1993, pg. 378-387.

74. J.D. Aplevich and K.A. Morris, "Algebraic Controller Design: Solution Parameterization and Recursive Design Using Implicit Systems", in *Linear Algebra in Systems and Control,* ed. B.N. Datta *et al*, SIAM, 1988, pg. 287-299.

75. K.A. Morris and M. Vidyasagar, "Modelling of Beam Vibrations for the Purpose of Controller Design", in *Symposium on Robotics,* ed. K. Youcef-Toumi and H. Kazerooni, ASME, 1988, pg. 17-26.

76. M. Vidyasagar and K.A. Morris, "An Analysis of Euler-Bernoulli Beams from the Standpoint of Controller Design", in *Modelling and Control of Robotic Manipulators and Manufacturing Processes,* ed. R. Shoureshi, K. Youcef-Toumi and H. Kazerooni, ASME, 1987, pg. 297-306.

Articles in Refereed Conference Proceedings

77. B. Sherbak and K. A. Morris, " Implementation of Kalman filtering for differential algebraic equations", *2021 American Control Conference.*

78. S. Afshar, F. Germ and K. A. Morris, "Well-posedness of Extended Kalman Filter equations for semilinear infinite-dimensional systems", *2020 IEEE Conference on Decision and Control.*

79. S. Tang and K. A. Morris, "Optimal Sensor Design for Infinite-Time Kalman Filters", *2017 Conference on Decision & Control.*

80. S. Afshar, K. A. Morris and A. Khajepour, "State of charge estimation via extended Kalman Filter designed for electrochemical equations", *2017 IFAC World Congress.*

81. S. Afshar, K. A. Morris and A. Khajepour, "Fully dynamical representation of a LFP battery cell", *2017 American Control Conference.*

82. W. Hu, K. A. Morris and Y. Zhang, "Sensor Location in a Controlled Thermal Fluid", *2016 Conference on Decision & Control.*

83. C. Lidstrom, A. Rantzer and K. A. Morris, "H_∞ - Optimal Control for Infinite-Dimensional Systems with Strictly Negative Generator", *2016 Conference on Decision & Control.*

84. K. A. Morris and A. Vest, "Design of damping for optimal energy dissipation of vibrations", *2016 Conference on Decision & Control.*

85. K. A. Morris and S. D. Yang, "A study of optimal actuator placement for control of diffusion", *2016 American Control Conference.*

86. S. Afshar, K. A. Morris and A. Khajepour, "Hysteresis in PDE model of a Li-ion battery", *2016 American Control Conference.*

87. R. al Jamal and K. A. Morris, "Output Feedback Control of the Kuramoto-Sivashinsky Equation", 54th IEEE Conference on Decision and Control, 2015.

88. S. Afshar, K.A. Morris and A. Khajepour, "Comparison of different observer designs for nonlinear diffusion", 54th IEEE Conference on Decision and Control, 2015.

89. B. Jacob, K. A. Morris and H. Zwart, "Zero dynamics for waves on networks", *5 th IFAC Workshop on Lagrangian and Hamiltonian Methods for Nonlinear Control*, 2015

90. R. Al Jamal and K. A. Morris, "Bounded Control of the Kuramoto-Sivashinsky Equation Using Approximations", *2015 American Control Conference.*

91. T. Khan, K. A. Morris and M. Stastna, "Computation of the Optimal Sensor Location for the Estimation of a Linear Dispersive Wave Equation", *2015 American Control Conference.*

92. R. Al Jamal, K. A. Morris and A. N. F. Chow, "Linearized Stability Analysis of Nonlinear Partial Differential Equations", *21st International Symposium on Mathematical Theory of Networks and Systems*, 2013.

93. A. O. Ozer and K. A. Morris, "Modeling an elastic beam with piezoelectric patches by including magnetic effects", *Proceedings of the American Control Conference*, 2014.

94. A. Chow and K. A. Morris, "Hysteresis in the Linearized Landau–Lifshitz Equation", *Proceedings of the American Control Conference*, 2014.

95. S. D. Yang and K. A. Morris, "Comparison of Linear-Quadratic and Controllability Criteria for Actuator Placement on a Beam", *Proceedings of the American Control Conference*, 2014.

96. K. A. Morris and A. O. Ozer, "Strong Stabilization of Piezoelectric Beams with Magnetic Effects", *IEEE Conf. on Decision & Control*, Florence, Italy, 2013.

97. D. Kasinathan, K. A. Morris and S. D. Yang, "Calculation of H_∞-optimal actuator locations for distributed parameter systems", *American Control Conference*, 2013.

98. N. Darivandi, K. A. Morris and A. Khajepour, "Optimal Active Vibration Control of Beams", *American Control Conference*, 2012.

99. B. Jacob and K.A. Morris, "Root Locus for SISO Infinite-dimensional systems", *50th IEEE Conf. on Dec. & Cont.*, Orlando, USA, 2011.

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CURRICULUM DEVELOPMENT

- Developed and taught interdisciplinary course in Mathematics & Music
- Developed online course for teachers in Mathematics & Music
- Established and maintain a Dynamics and Control Laboratory used in senior course, research and for outreach
- Developed senior course on feedback control
- Redesigned Variational Calculus course to include applications to mechanics and optimal control

STUDENT SUPERVISION

Post-Doctoral Fellows and Graduate Students Supervised

Name	Degree/Year	Thesis	Position
Fei Liu[1]	M. Math. 2020-	Bridge vibration control	
Avneet Kaur	PhD 2020-	Estimation using machine learning	
Brian Mao[2]	M. Math 2020-	Date-driven tire friction estimation	
Ala'a Alabi	PhD 2019-	Partial differential algebraic equations	
Bogdan Sherbak	M.Math 2018-2020	Estimation of DAEs	engineer, Porsche
Xuanri Li	M.Math. 2018-2020	joint actuator/sensor placement	teacher
Fabian Germ	M. Math 2017- 2019	estimation of nonlinear PDEs	PhD student Edinburgh
Stan Zonov[3]	M. Math 2017-2019	Optimal estimation in lakes	
M. Sajjad Edaletzadeh	Ph. D. 2015- 2019	Optimal control of semilinear PDEs	PDF, Chemnitz
Shuxia Tang	PDF 2017- 2018	Optimal sensor shape	faculty, Texas A&M
Minxin Zhang	M.Math 2014-2016	Optimal sensor design	UC-San Diego
Ambroise Vest	PDF 2014-2015	Optimal Damping	lecturer, France
Tawsif Khan[3]	M.Math 2013-2015	Optimal Sensing in Lakes	Rubikloud Technologies
Sepideh Afshar[2]	PhD 2012-2017	Estimation in Lithium-Ion Batteries	faculty, Harvard
Amir Issaei	M.Math 2012-2014	Optimal Filtering	MDA Corp.
Arman Tavakoli	M.Math 2012-2014	H_2-optimal Sensor Location	MDA Corp.
Ahmet Ozkan Ozer	PDF 2011-2013	Stabilization of Nonlinear Plates	Univ. of Nevada
Neda Darivandi[2]	PhD 2009-2013	Shape Control of Structures	research, Hatch Inc.
Tyler Holden[4]	M.Math. 2009-2011	Computation of quantum controls	doctoral student
Rasha al Jamal	PhD 2009-2013	Kuramoto-Sivashinsky Equation	faculty, U Kuwait
Amenda Chow	PhD 2008-2013	Control of Landau-Lifshitz equation	faculty, York Univ.
Alex Shum[2]	Ph.D. 2009-2014	Optimal Path Planning	lect., Univ. Hong Kong
Dhanaraja Kasinathan	PhD 2007-2012	H_∞-Optimal Actuator Location	research scientist, UTRC
Alex Shum	M.Math 2009-2012	PID Control of Smart Materials	lect., Univ. Hong Kong
Robert Huneault[4]	M.Math 2008-2010	Time-Optimal Control of Closed Quantum Systems	analyst Millennium Research
Sina Valadkhan[2]	PDF 2007	Robust Nano-Positioning Control	research dept., Corning control engineer
Ramesh Periasamy[2]	M.App.Sc. 2005-2007	Optimal Sensor/Actuator Placement for Shape Control	doctoral student

[1] co-supervised with S. Narasimhan, Civil Eng, UCLA
[2] co-supervised with A. Khajepour, Mech. Eng.
[3] co-supervised with M. Stastna, App. Math.
[4] co-supervised with J. Emerson, Institute for Quantum Computing