CURRICULUM VITAE

ELMER G. GILBERT

PERSONAL

Current Titles:	Professor Emeritus, Aerospace Engineering, College of Engineering, University of Michigan
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EDUCATION

B.S.E.	Electrical Engineering, University of Michigan, 1952
M.S.E.	Electrical Engineering, University of Michigan, 1953
Ph.D.	Instrumentation Engineering, University of Michigan, 1957

PROFESSIONAL HISTORY

Appointments at the University of Michigan
    Instructor, 1954
    Assistant Professor, 1957
    Associate Professor, 1959
    Professor, 1963
    Professor Emeritus, 1994

Visiting Positions
    The United States Air Force Academy, 1965
    The Johns Hopkins University, 1974-1976, 1991-1992
    University of Minnesota, 1985-1986
    National University of Singapore, six times 1997-2005

Consulting Activities
    A founder and past member of the Board of Directors of Applied Dynamics, Inc
    Consultant for Applied Dynamics International
    Consultant for General Motors Research Laboratories

HONORS AND AWARDS

Professional Recognition

O. H. Schuck Award for Best Paper at the 1977 Joint Automatic Control Conference

Fellow, Institute of Electrical and Electronic Engineers, 1979:
"For contributions to multivariable and optimal control systems"

IEEE Control Systems Society, Best Paper Award for 1979

Plenary Speaker, 1992 American Control Conference

Member, National Academy of Engineering (United States), 1994:
"For contributions to the theory and practice of multivariable, optimal, non-linear, and computer control systems, and to control engineering education"

IEEE Technical Field Award, Control Systems, 1994:
"For pioneering and innovative contributions to linear state space theory and its applications, especially realization and decoupling, as well as to control algorithms"

Fellow, American Association for the Advancement of Science, 1995:
"For contributions to theory and practice of multivariable, optimal,   nonlinear, and computer control systems and to control engineering education"

Richard E. Bellman Control Heritage Award (American Automatic Control Council), 1996:
"In recognition of a distinguished career in automatic control, with pioneering research contributions to a broad range of subjects including linear multivariable systems theory, computation of optimal controls, nonlinear systems theory, and motion planning in the presence of obstacles"

University Awards

Research Excellence Award, College of Engineering, University of Michigan, 1986

Member, The Johns Hopkins University Society of Scholars, 1990 - present

Distinguished Faculty Achievement Award, University of Michigan, 1991

PROFESSIONAL CONTRIBUTIONS

Engineering Development

Co-founder and long-time consultant for Applied Dynamics Inc. and its successors
Key member of design group responsible for the conception and development of analog-hybrid computer systems
Inventor of high performance computer devices

University Activities

Contributor to the control engineering programs at the University of Michigan
Chair or Co-Chair, 23 Ph.D. dissertations
Sponsored research activities

Research Topics

Error analysis of analog-hybrid computer components
Evaluation of methods for simulating dynamic systems
Linear systems theory, including basic contributions to: realization theory, state
   space decomposition, feedback decoupling of multivariable control systems
Computational methods in optimal control with emphasis on convexity methods
   for treating problems with discontinuous and impulsive controls
Analysis and synthesis techniques for nonlinear dynamic systems
Theory and application of optimal periodic control
Optimal aircraft cruise
Nonlinear feedback control with applications to manipulator control
Stability of nonlinear systems with model predictive control feedback
Optimal path planning for robots in the presence of obstacles
Algorithms for computing the distance between objects in three space
Robotic collision detection and path finding algorithms
Optimization of rocket trajectories
Feedback control of systems with pointwise-in-time state and control constraints

Patents

Electronic computer devices (7 patents)
Elevator speed control system (1)
Anti-sway control of a crane under operator command (1)

1.	3,371,223	2-27-68	Electronic switching apparatus
2.	3,381,231*	4-30-68	Track-transfer sample-hold circuits
3.	3,503,049	3-24-70	Fast-reset integrator circuit
4.	3,753,234*	8-14-73	Multicomputer system with simultaneous data interchange between computers
5.	3,480,769*	11-25-69	Computer control arrangement
6.	3,488,478	1-06-70	Comparator buffer
7.	3,587,055	6-22-71	Plural operator-station time-shared analog computer apparatus
8.	3,783,974*	1-08-74	Predictive drive controls for elevators
9.	6,588,610*	7-08-03	Anti-sway control of crane under operator's command

* indicates joint patent with other person(s)

PUBLICATIONS

(1)   Gilbert EO, Gilbert EG. "A Capacitively Coupled Field Mapper for Two-Dimensional Distributed Source Field Problems," AIEE Transactions, Vol. 72, Part I, pp. 345-351, 1953; and Electrical Engineering, Vol. 72, pp. 600-605, 1953. (Presented at the AIEE Southern District Meeting, Louisville, KY, 1953.)

(2)   Gilbert EG, Howe RM. "Trigonometric Resolution in Analog Computers by Means of Multiplier Elements," IRE Transactions on Electronic Computers, Vol. EC-6(2), pp. 86-92, 1957.

(3)   Gilbert EG. "A Vector Method for the Evaluation of Derivatives of Phase, Gain, and Attenuation," Proceedings of the Institute of Radio Engineers (IRE), Vol. 47(1), pp. 85-86, 1959.

(4)   Uberoi MS, Gilbert EG. "Technique for Measurement of Cross-Spectral Density of Two Random Functions," Review of Scientific Instruments, Vol. 30(3), pp. 176-180, 1959.

(5)   Gilbert EG. "Linear System Approximation by Differential Analyzer Simulation of Orthonormal Approximating Functions," IRE Transactions on Electronic Computers, Vol. EC-8(2), pp. 204-209, 1959. (Presented at the National Simulation Conference, Dallas, TX, 1958.)

(6)   Gilbert EG. "The Computation of Correlation and Spectral Functions by Orthogonal Filtering," AIEE Transactions, Vol. 79, Part I, pp. 954-959, 1960. (Presented at the 1959 AIEE Fall General Meeting, Chicago, IL.)

(7)   Gilbert EG, Otterman J. "The Synthesis of Linear Filters with Real or Imaginary Transfer Functions," AIEE Transactions, Vol. 79, Part I, pp. 323-330, 1960.

(8)   Gilbert EG, "A Simple Method for Improving the Accuracy of Cross-Spectral Density Measurements," Review of Scientific Instruments, Vol. 31(9), pp. 1014-1015, 1960.

(9)   Gilbert EG. "An Approximate Method for Analytically Evaluating the Response of Time-Variable Linear Systems," IRE Transactions on Circuit Theory, Vol. CT-9(3), pp. 289-295, 1961.

(10)   Gilbert EG. "Controllability and Observability in Multivariable Control Systems," SIAM Journal on Control, Series A, Vol. 2(1), pp. 128-151, 1963. (Presented at the 1962 SIAM Fall Meeting, MIT; abstract: Gilbert EG, Morgan BS, SIAM Review, Vol. 5(2), p. 185, 1963.)

(11)   Gilbert EG. "Hybrid Computer Solution of Time-Optimal Control Problems," Proceedings of the 1963 AFIPS Spring Joint Computer Conference, Detroit, MI, pp. 197-204, 1963.

(12)   Gilbert EG. "The Application of Hybrid Computers to the Iterative Solution of Optimal Control Problems," pp. 261-284 in Balakrishnan AV, Neustadt LW (Eds.), Computing Methods in Optimization Problems, New York: Academic Press, 1964.

(13)   Gilbert EG, Fadden EJ. "Computational Aspects of the Time Optimal Control Problem," pp. 167-192 in Balakrishnan AV, Neustadt LW (Eds.), Computing Methods in Optimization Problems, New York: Academic Press, 1964.

(14)   Gilbert EG. "An Iterative Procedure for Computing the Minimum of a Quadratic Form on a Convex Set," SIAM Journal on Control, Vol. 4, pp. 61-80, 1966. (Presented at the International Conference on Programming and Control, USAF Academy, Colorado Springs, CO, 1965.)

(15)   Barr, RO, Gilbert EG. "Some Iterative Procedures for Computing Optimal Controls," Proceedings of the 3rd (1966) World Congress of the International Federation of Automatic Control (IFAC), London, Vol. 1, Part 2, pp. 240.1-240.9, 1966.

(16)   Gilbert EG. "Optimum Design and Error Analysis of Digital Integrators for Discrete System Simulation," IEEE Transactions on Electronic Computers, Vol. EC-15(3), pp. 392-393, 1966.

(17)   Gilbert EG. "Some Critical Remarks on a New Numerical Method for Simulation of Dynamical Systems," Simulation, Vol. 6, pp. 90-91, 1966.

(18)   Gilbert EG. "Dynamic-Error Analysis of Digital and Combined Analog-Digital Systems," Simulation, Vol. 6, pp. 241-257, 1966.

(19)   Gilbert EG. "Error-Analysis of Hybrid Computer Loops," Mathematics and Computers in Simulation (Transactions of the International Association for Mathematics and Computers in Simulation), Vol. 9(1), pp. 35-36, 1966.

(20)   Gilbert EG. "A Selected Bibliography on Parameter Optimization Methods Suitable for Hybrid Computation," Simulation, Vol. 8, pp. 350-352, 1967.

(21)   Gilbert EG. "A Note on the Fixed Point Method of J. E. Rubio," SIAM Journal on Control, Vol. 5, pp. 513-514, 1967.

(22)   Gilbert EG, Moran RA. "A General Method for Programming Synchronous Logic in Analog Computation," Proceedings of the 1968 AFIPS Fall Joint Computer Conference, San Francisco, CA, pp. 1251-1257, 1968.

(23)   Gilbert EG. "The Decoupling of Multivariable Systems by State Feedback," SIAM Journal on Control, Vol. 7(1), pp. 50-63, 1969.

(24)   Gilbert EG, Pivnichny JR. "A Computer Program for the Synthesis of Decoupled Multivariable Systems," IEEE Transactions on Automatic Control, Vol. AC14(6), pp. 652-659, 1969. (Presented at the 1969 Joint Automatic Control Conference, Boulder, CO.)

(25)   Barr RO, Gilbert EG. "Some Efficient Algorithms for a Class of Abstract Optimization Problems Arising in Optimal Control," IEEE Transactions on Automatic Control, Vol. AC14(6), pp. 640-652, 1969.

(26)   Funk JE, Gilbert EG. "Some Sufficient Conditions for Optimality in Control Problems with State Space Constraints," SIAM Journal on Control, Vol. 8(4), pp. 498-504, 1970.

(27)   Gilbert EG, Harasty GA. "A Class of Fixed-Time Fuel-Optimal Impulsive Control Problems and an Efficient Algorithm for Their Solution," IEEE Transactions on Automatic Control, Vol. AC16(1), pp. 1-11, 1971. (Presented in part at the All Union Conference on Mathematical Methods of Optimal Control and Minimal Surfaces, Tbilisi, USSR, September 1969.)

(28)   Gilbert EG. "The Neustadt Algorithms and Other Convexity Methods for Computation of Optimal Controls, A Survey," Proceedings of the 14th (1973) Joint Automatic Control Conference, Columbus, OH, pp. 5-6, 1973.

(29)   Gilbert EG. "Periodic Control of Vehicle Cruise: Improved Fuel Economy by High and Low Frequency Switching," Proceedings of the 1975 Conference on Information Sciences and Systems, The Johns Hopkins University, pp. 289-296, 1975.

(30)   Gilbert EG. "Volterra Series and the Response of Nonlinear Differential Systems: A New Approach," Proceedings of the 1976 Conference on Information Sciences and Systems, The Johns Hopkins University, pp. 394-400, 1976.

(31)   Gilbert EG, Parsons MG. "Periodic Control and the Optimality of Aircraft Cruise," Journal of Aircraft, Vol. 13(10), pp. 828-830, 1976.

(32)   Gilbert EG. "Vehicle Cruise: Improved Fuel Economy by Periodic Control," Automatica, Vol. 12(2), pp. 159-166, 1976.

(33)   Brockett RW, Gilbert EG. "An Addendum to Volterra Series and Geometric Control Theory," Automatica, Vol. 12(6), p. 635, 1976.

(34)   Gilbert EG. "Minimal Realizations for Nonlinear I-O Maps: The Continuous-Time, 2-Power Case," Proceedings of the 1977 Conference on Information Sciences and Systems, The Johns Hopkins University, pp. 308-316, 1977.

(35)   Gilbert EG. "Optimal Periodic Control: A General Theory of Necessary Conditions," SIAM Journal on Control and Optimization, Vol. 15(5), pp. 717-746, 1977. (Presented in part at the 1976 IEEE Conference on Decision and Control, Clearwater, FL.)

(36)   Gilbert EG. "Functional Expansions for Response of Nonlinear Differential Systems," IEEE Transactions on Automatic Control, Vol. 22(6), pp. 909-921, 1977. (Presented in part at the 1977 Joint Automatic Control Conference, San Francisco, CA.) (Given a best paper award by IEEE Control Systems Society.)

(37)   Gilbert EG. "Bilinear and 2-Power Input-Output Maps: Finite Dimensional Realizations and the Role of Functional Series," IEEE Transactions on Automatic Control, Vol. 23(3), pp. 418-425, 1978. (Presented at the 1977 Joint Automatic Control Conference, San Francisco, CA.)

(38)   Gilbert EG. "Realization Algorithms for Linear Systems and the Role of the Restricted Backward Shift Realization," Proceedings of the 1978 Conference on Information Sciences and Systems, The Johns Hopkins University, pp. 145-151, 1978.

(39)   Gilbert EG. "Optimal Periodic Control: A Solution Set Theory of Necessary and Sufficient Conditions," Proceedings of the 7th (1978) World Congress of the International Federation of Automatic Control (IFAC), Helsinki, Finland, pp. 2057-2064, 1978.

(40)   Gilbert EG. "A Canonical Form for Minimal Realizations of 2-Power I-O Maps," Proceedings of the 1979 Conference on Information Sciences and Systems, The Johns Hopkins University, p. 226, 1979.

(41)   Bernstein DS, Gilbert EG. "Optimal Periodic Control: The Pi Test Revisited," IEEE Transactions on Automatic Control, Vol. 25(4), pp. 673-684, 1980.

(42)   Gilbert EG, Lyons DT. "Improved Aircraft Cruise by Periodic Control: The Computation of Optimal Specific Range Trajectories," Proceedings of the 1980 Conference on Information Sciences and Systems, Princeton University, pp. 602-607, 1980.

(43)   Gilbert EG. "Optimal Feedback Laws for a Class of Time-Dependent Periodic Control Problems," Proceedings of the 1981 Conference on Information Sciences and Systems, The Johns Hopkins University, p. 62, 1981.

(44)   Lyons DT, Gilbert EG. "The Improvement of Aircraft Specific Range by Periodic Control," Proceedings of the 1981 AIAA Guidance and Control Conference, Albuquerque, NM, Paper No. 1748, 1981.

(45)   Gilbert EG. "The Decoupling of Multivariable Systems by State Feedback, A Citation Classic," Current Contents/Engineering Technology & Applied Sciences, Vol. 37, p. 20. 1981.

(46)   Gilbert EG. "Minimal-Order Realizations of Continuous-Time Two-Power Input-Output Maps," IEEE Transactions on Automatic Control, Vol. 28(4), pp. 452-464, 1983. (Presented at the 1981 IEEE Conference on Decision and Control, San Diego, CA.)

(47)   Gilbert EG, Bernstein DS. "Second-Order Necessary Conditions in Optimal Control: Accessory-Problem Results Without Normality Conditions," Journal of Optimization Theory and Applications, Vol. 41(1), pp. 75-106, 1983.

(48)   Gilbert EG. "Conditions for Minimizing the Norm Sensitivity of Characteristic Roots," IEEE Transactions on Automatic Control, Vol. 29(7), pp. 658-661, 1984. (Presented in part at the 1983 Conference on Information Sciences and Systems, The John Hopkins University, and the 1983 IEEE Conference on Decision and Control, San Antonio, TX.)

(49)   Gilbert EG, Ha IJ. "An Approach to Nonlinear Feedback Control with Applications to Robotics," IEEE Transactions on Systems, Man, and Cybernetics, Vol. 14(6), pp. 879-884, 1984. (Presented at the 1983 Conference on Information Sciences and Systems, The Johns Hopkins University, and the 1983 IEEE Conference on Information Sciences and Systems, San Antonio, TX.)

(50)   Gilbert EG, Johnson DW. "Distance Functions and Their Application to Robot Path Planning in the Presence of Obstacles," IEEE Journal of Robotics and Automation, Vol. RA-1(1), pp. 21-30, 1985. (Early versions presented at the 1984 Conference on Information Sciences and Systems, Princeton University, and the 1984 IEEE Conference on Decision and Control, Fort Lauderdale, FL.)

(51)   Keerthi SS, Gilbert EG. "An Existence Theorem for Discrete-Time Infinite-Horizon Optimal Control Problems," IEEE Transactions on Automatic Control, Vol. 30(9), pp. 907-909, 1985.

(52)   Gilbert EG, Johnson DW. "Minimum-Time Robot Path Planning in the Presence of Obstacles," Proceedings of the 1985 IEEE Conference on Decision and Control, pp. 1748-1753, 1985. (Presented at the 24th (1985) IEEE Conference on Decision and Control, Fort Lauderdale, FL.)

(53)   Keerthi SS, Gilbert EG. "Optimal Infinite-Horizon Control and the Stabilization of Linear Discrete-Time Systems: State-Control Constraints and Nonquadratic Cost Functions," IEEE Transactions on Automatic Control, Vol. 31(3), pp. 264-266, 1986. (Presented in part at the 24th (1985) IEEE Conference on Decision and Control, Fort Lauderdale, FL.)

(54)   Ha IJ, Gilbert EG. "A Complete Characterization of Decoupling Control Laws for a General Class of Nonlinear Systems," IEEE Transactions on Automatic Control, Vol. 31(9), pp. 823-830, 1986. (Presented in part at the 1985 Conference on Information Sciences and Systems, The Johns Hopkins University.)

(55)   Keerthi SS, Gilbert EG. "Computation of Minimum-Time Feedback Control Laws for Discrete-Time Systems with State-Control Constraints," IEEE Transactions on Automatic Control, Vol. 32(5), pp. 432-435, 1987. (Presented in part at the 1986 Conference on Information Sciences and Systems, Princeton University.)

(56)   Ha IJ, Gilbert EG. "Robust Tracking in Nonlinear Systems," IEEE Transactions on Automatic Control, Vol. 32(9), pp. 763-771, 1987. (Presented in early form at the 1985 IEEE Conference on Decision and Control, Fort Lauderdale, FL.)

(57)   Keerthi SS, Gilbert EG. "Optimal Infinite-Horizon Feedback Laws for a General Class of Constrained Discrete-Time Systems: Stability and Moving-Horizon Approximations," Journal of Optimization Theory and Applications, Vol. 57(2), pp. 265-293, 1988. (Presented in part at the 1986 Conference on Information Sciences and Systems, Princeton University.)

(58)   Gilbert EG, Johnson DW, Keerthi SS. "A Fast Procedure for Computing the Distance Between Complex Objects in 3-Dimensional Space," IEEE Journal of Robotics and Automation, Vol. 4(2), pp. 193-203, 1988. (Presented at the 1987 IEEE International Conference on Robotics and Automation, Raleigh, NC.) (A documented and tested Fortran subroutine implementing the procedure is available.)

(59)   Howe RM, Gilbert EG, Lu P, Shorr G, Vinh NX. "Computation of Optimal Trajectories Using State-of-the-art Simulation Technology," Proceedings of the Conference on Aerospace Simulation III, pp. 275-285, 1988.

(60)   Howe RM, Gilbert EG, Lu P, Vinh NX. "Trajectory Optimization of Earth-Launched Interceptors at Supercircular Speeds," Proceedings of the International Society for Optical Engineering, Vol. 872, pp. 12-18, 1988.

(61)   Vinh NX, Lu P, Howe RM, Gilbert EG. "Optimal Interception with Time Constraint," Journal of Optimization Theory and Applications, Vol. 66(3), pp. 361-390, 1990.

(62)   Gilbert EG, Foo CP. "Computing the Distance Between Smooth Objects in 3-Dimensional Space," IEEE Transactions on Robotics and Automation, Vol. 6(1), pp. 53-61, 1990. (Presented in part at the 1989 IEEE International Conference on Robotics and Automation, Scottsdale, AZ; see conference proceedings pp. 158-163.)

(63)   Gilbert EG, Hong SM. "A New Algorithm for Detecting the Collision of Moving Objects," Proceedings of the 1989 IEEE International Conference on Robotics and Automation, Scottsdale, AZ, pp. 8-14, 1989.

(64)   Gilbert EG, Howe RM, Lu P, Vinh NX. "Optimal Aeroassisted Intercept Trajectories at Hyperbolic Speeds," Journal of Guidance, Control and Dynamics, Vol. 14(1), pp. 123-131,1991. (Presented at the 1989 AIAA Guidance, Navigation, and Control Conference, Boston, MA.)

(65)   Gilbert EG, Tan KT. "Linear Systems with State and Control Constraints: The Theory and Application of Maximal Output Admissible Sets," IEEE Transactions on Automatic Control, Vol. 36(9), pp. 1008-1020, 1991. (Presented at the 1991 American Control Conference, Boston, MA.)

(66)   Tan KT, Gilbert EG. "Multimode Controllers for Linear Discrete-Time Systems with General State and Control Constraints," Proceedings of the International Conference on Optimization Techniques and Applications, Singapore, pp. 433-442, 1992.

(67)   Gilbert EG, Ong CJ. "New Distances for the Separation and Penetration of Objects," Proceedings of the 1994 IEEE Conference on Robotics and Automation, San Diego, CA, pp. 579-586, 1994.

(68)   Ong CJ, Gilbert EG. "Robot Path Planning with Penetration Growth Distance," Proceedings of the 1994 IEEE Conference on Robotics and Automation, San Diego, CA, pp. 2146-2152, 1994.

(69)   Gilbert EG, Kolmanovsky I, Tan KT. "Nonlinear Control of Discrete-Time Linear Systems with State and Control Constraints: A Reference Governor with Global Convergence Properties," Proceedings of the 33rd (1994) Conference on Decision and Control, Orlando, FL, pp. 144-149, 1994.

(70)   Gilbert EG, Kolmanovsky I, Tan KT. "Discrete-Time Reference Governors and the Nonlinear Control of Systems with State and Control Constraints," International Journal of Robust and Nonlinear Control, Vol. 5(5), pp. 487-504, 1995.

(71)   Vinh NX, Gilbert EG, Howe RM, Sheu D, Lu P. "Reachable Domain for Interception at Hyperbolic Speeds," Acta Astronautica, Vol. 35(1), pp. 1-8, 1995.

(72)   Gilbert EG. "Applications, Theory, and Curiosity," IEEE Control Systems Magazine, Vol. 15(3), p. 103, 1995.

(73)   Gilbert EG, Kolmanovsky I. "Discrete-Time Reference Governors for Systems with State and Control Constraints and Disturbance Inputs," Proceedings of the 34th (1995) IEEE Conference on Decision and Control, New Orleans, LA, pp. 1189-1194, 1995.

(74)   Kolmanovsky I, Gilbert EG. "Maximal Output Admissible Sets for Discrete-time Systems with Disturbance Inputs," Proceedings of the 1995 American Control Conference, Seattle, WA, pp. 1995-1999, 1995.

(75)   Ong CJ, Gilbert EG." Growth Distances: New Measures for Object Separation and Penetration," IEEE Transactions on Robotics and Automation, Vol. 12(6), pp. 888-903, 1996.

(76)   Kolmanovsky I, Gilbert EG,. "Multimode Regulators for Systems with State & Control Constraints and Disturbance Inputs," Pp. 104-117 in Morse AS (Ed.), Control Using Logic-Based Switching (Vol. 222, Lecture Notes in Control and Information Sciences), London: Springer-Verlag, 1997.

(77)   Ong CJ, Gilbert EG. "The Gilbert-Johnson-Keerthi Distance Algorithm: A Fast Version for Incremental Motions," Proceedings of the 1997 IEEE International Conference on Robotics and Automation, Albuquerque, NM, pp. 1183-1189, 1997.

(78)   Kolmanovsky IV, Gilbert EG, Cook JA. "Reference Governors for Supplemental Torque Source Control in Turbocharged Diesel Engines," Proceedings of the 1997 American Control Conference, Albuquerque, NM, pp. 652-656, 1998.

(79)   Kolmanovsky I, Gilbert EG. "Theory and Computation of Disturbance Invariant Sets for Discrete-Time Linear Systems," Mathematical Problems in Engineering, Vol. 4(4), pp. 317-367, 1998.

(80)   Kolmanovsky I, Miller RH, Washabaugh, Gilbert EG. "Nonlinear Control of Electrostatically Shaped Membranes with State and Control Constraints," Proceedings of the 1998 American Control Conference, Philadelphia, PA, pp. 2927-2931, 1998.

(81)   Kolmanovsky I, Gilbert EG, McClamroch NH, Maizenberg TL. "Toward Less Conservative Designs of Multimode Controllers for Systems with State and Control Constraints," Proceedings of the 37th (1998) IEEE Conference on Decision and Control, Tampa, FL, pp. 1647-1652, 1998.

(82)   Ong CJ, Gilbert EG. "Robot Path Planning with Penetration Growth Distance," Journal of Robotic Systems, Vol. 15(2), pp. 57-74, 1998.

(83)   Shen J, McClamroch NH, Gilbert EG. "A Computational Approach to Conflict Detection Problems in Air Traffic Control," Proceedings of the 1999 American Control Conference, San Diego, CA, pp. 1445-1449, 1999.

(84)   Kolmanovsky I, van Niewstadt M, Sun J, Gilbert E. "Optimal Control of a Gasoline Direct Injection Engine," Proceedings of the SME Dynamic Systems and Control Division, DSC Vol. 67, pp. 275-282, 1999. (Presented at the 1999 ASME International Mechanical Engineering Congress and Exposition, Nashville, TN.)

(85)   Gilbert EG, Kolmanovsky I. "Fast Reference Governors for Systems with State and Control Constraints and Disturbance Inputs," International Journal of Robust and Nonlinear Control, Vol. 9(15), pp. 1117-1141, 1999.

(86)   Keerthi SS, Ong CJ, Huang E, Gilbert EG. "EquiDistance Diagram: A New Roadmap Method for Path Planning," Proceedings of the 1999 International Conference on Robotics and Automation, Detroit, MI, pp. 682-687, 1999.

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(90)   Ong CJ, Gilbert EG. "Fast Versions of the Gilbert-Johnson-Keerthi Distance Algorithm: Additional Results and Comparisons," IEEE Transactions on Robotics and Automation, Vol. 17(4), pp. 531-539, 2001.

(91)   Gilbert EG, Kolmanovsky I. "A Generalized Reference Governor for Nonlinear Systems," Proceedings of the 40th (2001) IEEE Conference on Decision and Control, pp. 4222-4227, 2001.

(92)   Zhang ZH, Ong CJ, Keerthi SS, Gilbert EG. "Using Support Vector Machines for Stability Region Determination," Proceedings of the 9th (2002) International Conference on Neural Information Processing, Singapore, pp. 915-919, 2002.

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(94)   Gilbert E, Kolmanovsky I. "Nonlinear Tracking Control in the Presence of State and Control Constraints: A Generalized Reference Governor," Automatica, Vol. 38(12), pp. 2063-2073, 2002.

(95)   Kolmanovsky I, Gilbert EG. "Support Vector Machine-Based Determination of Gasoline Direct-Injection Engine Admissible Operating Envelope," Proceedings of the SAE World Congress, Detroit, MI, SAE Paper 2002-01-1301, 2002.

(96)   Ong CJ, Keerthi SS, Gilbert EG, Zhang ZH. "Stability Regions for Constrained Nonlinear Systems and Their Functional Characterization via Support-Vector-Machine Learning," Automatica, Vol. 40(11), pp. 1955-1964, 2004.

(97)   Ong CJ, Gilbert EG. "Outer Approximations of the Minimal Disturbance Invariant Set," Proceedings of the 44th (2005) IEEE Conference on Decision and Control, Seville, Spain, pp. 1678-1682, 2005.

(98)   Ong CJ, Sui D, Gilbert EG. "Enlarging the Terminal Region of Nonlinear Predictive Control Using the Support Vector Machine Method," Automatica, Vol. 42(6), pp. 1011-1016, 2006.

(99)   Ong CJ, Gilbert EG. "Constrained Linear Systems with Disturbances: Enlargement of Their Maximal Invariant Sets by Nonlinear Feedback," Proceedings of the 2006 American Control Conference, Minneapolis, MN, pp. 5245-5250, 2006.

(100)   Ong CJ, Gilbert EG. "The Minimal Disturbance Invariant Set: Outer Approximations via Its Partial Sums," Automatica, Vol. 42(9), pp. 1563-1568, 2006.

(101)   Kolmanovsky IV, Gilbert EG, Tseng HE. "Constrained Control of Vehicle Steering," Proceedings of the 2009 IEEE International Conference on Control Applications (Part of the 2009 IEEE Multi-Conference on Systems and Control), St. Petersburg, Russia, pp. 576-581, 2009.

(102)   Spangelo SC, Gilbert EG, Klesh AT, Kabamba PT, Girard AR. "Periodic Energy-Optimal Path Planning for Solar-Powered Aircraft," Proceedings of the 2009 AIAA Guidance, Navigation, and Control Conference, Chicago, IL, Paper No. 1630, 2009.

(103) Gilbert EG, Ong CJ. "An Extended Command Governor for Constrained Linear Systems with Disturbances," Proceedings of the 2009 IEEE Conference on Decision and Control, Shanghai, China, pp. 6929-6934, 2009.

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