

SANJOY K. MITTER
Professor of Electrical Engineering
Massachusetts Institute of Technology

ADDRESS

MIT
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EDUCATION

1954 B.S., Mathematics, Calcutta University, India
1957 B.Sc., Engineering, ACGI, Imperial College of Science and Technology,
 London, England
1965 Ph.D., Electrical Engineering, Imperial College
 Thesis: *Function Space Methods in Optimal Control with Applications to
 Power Systems*

FIELDS OF INTEREST

Mathematical Theory of Systems and Control, Stochastic Dynamical Systems and Their Role in Filtering and Control; Mathematical Physics and its Relationship to System Theory; Image Analysis and Vision; Structure, Function and Organization of Complex Systems.

AWARDS

1962-1965 Central Electricity Research Board Fellow, Imperial College, London

1979 IEEE Fellow

1988 Member, National Academy of Engineering

2000 IEEE Control Systems Award

2003 Foreign Member, Istituto Veneto di Scienze, Lettere ed Arti

PROFESSIONAL EXPERIENCE

9/57-2/61 Development Engineer, Brown Boveri and Co., Ltd.,
 Baden, Switzerland

3/61-10/62 Research Engineer, Battelle Memorial Institute,
 Geneva, Switzerland

6/62-8/65 Central Electricity Board Research Fellow,
 Imperial College, London, England

9/65-7/67 Assistant Professor and Member of Systems Research Center,
 Case Institute of Technology

7/67-9/69 Associate Professor and Member of Systems Research Center,
 Case Western Reserve University

9/69-6/70	Visiting Associate Professor, MIT
7/70-6/73	Associate Professor of Electrical Engineering, MIT
7/73-present	Professor of Electrical Engineering, MIT
9/81-8/86	Director, Laboratory for Information and Decision Systems, MIT
9/86-6/99	Co-Director, LIDS, MIT
10/86-7/2000	Director, Center for Intelligent Control Systems, MIT

SHORT TERM APPOINTMENTS

12/70	Visiting Professor, Institut de Recherches d'Informatique et d'Automatique, Versailles, France
6/72-8/72	Science Research Council Senior Visiting Fellow, Imperial College, London, England
9/73-2/74	Visiting Professor, Technische Universität, Berlin
3/74	Dutch National Science Foundation Lecturer in Applied Mathematics, University of Groningen, Eindhoven and Twente
3/74-7/74	CNR Visiting Professor, Laboratorio per Ricerche di Dinamica dei Sistemi e di Elettronica Biomedica, Padova, Italy
7/76	Visiting Professor, University of Groningen, Holland
6/77	Visiting Professor, Department of Systems Science and Mathematics, Washington University, St. Louis, Missouri
12/77	Visiting Professor, Department of Electrical Engineering, University of Maryland
7/77	Visiting Professor, School of Mathematics, Tata Institute of Fundamental Research, Bombay, India
1/81-7/81	Visiting Professor, University of Florence, Mathematics Institute
6/83-present	Visiting Professor, Scuola Normale Superiore, Pisa, Italy
3/2000	McKay Professor, Dept. of Electrical Engineering & Computer Science, University of California, Berkeley, CA.
9/2003	Russell-Severance-Springer Chair, Dept. of Electrical Engineering & Computer Science, University of California, Berkeley, CA.

CONTRIBUTIONS TO PROFESSIONAL SOCIETIES, INDUSTRY, GOVERNMENT

Organization Membership and Activities

- 1968-1970 Chairman, IEEE, Technical Committee on Computational Methods and Distributed Systems, IEEE Professional Group on Automatic Control
- 1969-1973 Member, ADCOM, IEEE Control Systems Society
- 1971 Member, Organizing Committee of Conference entitled "Future Power Systems--Reliability, Research Regulation," organized by National Science Foundation and the Engineering Research Foundation, August 1971
- 1971 Program Chairman, 1st IEEE Decision and Control Conference, Miami Beach, Florida
- 12/71 Guest Associate Editor, special issue of Transactions on Automatic Control entitled Linear, Quadratic Gaussian Problem
- 1/72 Guest Co-editor, special issue of Proceedings of IEEE entitled Computers in Design
- 1977-1980 Chairman, AACC Theory Committee
- 1977-1981 SIAM Representative, AACC Awards Committee
- 1978-1983 Member, IEEE Control Systems Awards Committee
- 1979-1982 SIAM Representative, AMS-SIAM Joint Committee on Applied Mathematics
- 2/78 Organizer and Chairman of Session, "Can Mathematics be Applied to the Social Sciences?," Annual Meeting of AAAS, Washington, D.C.
- 1982-1983 Panel Member, Decision and Management Science Program, NSF
- 1985 Review Panel Member, Presidential Young Investigator Awards (Systems Theory and Operations Research Program), NSF
- 1986-1987 Member, Panel on Future Directions in Control Theory, NSF
- 1986-1989 Member, Committee on Recommendations for U.S. Army Basic Research
- 1988 Co-organizer, Summer Program on Signal Processing, Institute for Mathematics and Its Applications, Minneapolis.
- 1988-1989 Member, Program Committee, 1988 International Conference on Advances in Communications, Signal Processing and Control.
- 1989 Member, Program Committee, International Symposium on the Mathematical Theory of Networks and Systems (MTNS-89).

- 1991-1995 Member, Advisory Committee, Army High Performance Computing Research Center, University of Minnesota.
- 1992-1998 Member, Science Council, ICASE, NASA, Langley.
- 1992-1996 Associate Editor at Large, IEEE Transactions on Automatic Control
- 1999 Chairman, Review Committee for Division of Mathematics and Information Sciences, Army Research Office
- 1999 Panel Member, Evaluation of NSF-KDI Proposals.

Editorial Boards of Journals and Book Series in Engineering and Applied Mathematics:

Current:

Communications in Information and Systems
 Journal of Applied Mathematics & Optimization
 Nonlinear Analysis
 Progress in Systems and Control (book series)
 Random and Computational Dynamics
 Ulam Quarterly

Formerly:

Acta Applicandae Mathematica
 Circuits, Systems, and Signal Processing
 IEEE Transactions on Automatic Control
 Mathematics of Systems, Control and Signal Processing
 Sankhya
 Systems and Control Letters

Consultant

1966-1970 Cleveland Electric Illuminating Company, Cleveland, OH.
 1972-1976 C.S. Draper Laboratories, Cambridge, MA.
 1976-1987 Scientific Systems, Inc., Cambridge, MA.
 1979-1980 IBM Watson Research Laboratory, Yorktown Heights, NY.
 1988-1992 Director, Softron, Inc., Waltham, MA.
 1992-1994 C.S. Draper Laboratories, Cambridge, MA
 1992-1998 ICASE, NASA Langley
 1996-present Scientific Systems Company, Inc., Cambridge, MA.

Theses Supervised by Sanjoy K. Mitter

S.B. Theses

Lockhart, Thomas W., "A Model for Prediction of Course Six Core Course Registration," June 1972.

Crosby, Richard S., "Monte Carlo Methods for Lattice Fields", MIT, Department of Electrical Engineering and Computer Science, June 1989.

Jablonski, David A., "Visualization of Lattice Fields", MIT, Department of Electrical Engineering and Computer Science, June 1989.

Tatikonda, Sekhar C., "Identification of Linear Systems in Noisy Data", MIT, Department of Electrical Engineering and Computer Science, June 1993.

S.M. Theses

Kreiff, J., "Multi-level Control of Linear Systems," Case Western Reserve University, January 1968.

Delfour, Michel C., "Generalized Controllability for Perturbed Linear Systems," Case Western Reserve University, June 1968.

Celada, C. A., "Solution of a Two Stage Inventory Problem Using Decomposition Techniques," February 1972.

Spector, Victor A., "Choosing a Quadratic Cost Criterion in the Frequency Domain," February 1972.

Sartori di Borgericco, Eugene, "Stabilization of an Unstable System by Means of Finite Memory Feedback," January 1973.

Halliday, John S., "The Characterization of Vector Cardiograms for Pattern Recognition," June 1973.

Djaferis, Theodore E., "Exact Solution to Lyapunov's Equation Using Algebraic Methods," February 1977.

Doyle, John C., "Information Theory and Reduced Order Filtering," June 1977 (also used for S.B. degree).

Toldalagi, Paul M., "Estimation and Variational Methods for Gradient Algorithm Generation," June 1977.

Flamm, David S., "A Conceptual Proof of Rosenbrock's Pole Assignment Theorem," September 1977.

Vallot, Lawrence, "Filtering for Bilinear Systems," June 1981.

Akra, Mohamed A., "On the Analysis of the Hopfield Network: A Geometric Approach," September 1988.

Casadei, Stefano, "Multiscale Image Segmentation by Dishomogeneity Evaluation and Local Optimization", MIT, Department of Electrical Engineering and Computer Science, June 1991.

Chiang, Kenneth H., "Fuzzy Logic Mode Selection for a Recuperative Turboshift Engine", MIT, Department of Electrical Engineering and Computer Science", June 1992.

Cerrato, Dean E., "Modeling Unknown Dynamical Systems using Adaptive Structure Networks", MIT, Department of Electrical Engineering and Computer Science, June 1993.

Judish, Nathan P., "Polygonal Random Fields and the Reconstruction of Piecewise Continuous Functions," January 1993.

Chaudhari, Upendra.V. "Complexity Issues Dealing with Networks that Compute Boolean Functions," May 1993.

Lomelin, Mauricio, "Character Template Estimation from Document Images and Their Transcriptions," May 1995.

Sahai, Anant, "Handwritten Character Recognition using the Minimum Description Length Principle," May 1996.

Chu, Maurice, "Target Breakup Detection in the Multiple Hypothesis Tracking Formulation," June 1996.

Sekhar, Tatikonda; "Curve Reconstruction Via Line Intersection Tomography", January 1995.

Ph.D Theses

Simon, J.D., "Theory and Applications of Modal Control," Case Western Reserve University, June 1967. (Exxon Research Laboratories, New Jersey)

Kiang, W.L., "Two-level Linear Dynamical Systems," Case Western Reserve University, January 1968.

DyLiacco, T.E., "Control of Power Systems Via the Multi-level Concept," Case Western Reserve University, June 1968. (Formerly at Cleveland Illuminating Company; now consultant)

Phillipson, G.A., "The State Identification of a Class of Distributed Parameter Systems," Case Western Reserve University, June 1968. (Shell Development Company, Houston, Texas)

Heins, W., "Conjugate Convex Functions, Duality and Optimal Control Problems," Case Western Reserve University, January 1969. (Technical University, Delft, Holland)

Kershberg, L., "Algebraic Theory of Linear Systems," Case Western Reserve University, June 1969. (AT&T Bell Laboratories, New Jersey)

Licht, B., "Approximate Nonlinear Filtering," Case Western Reserve University, January 1970. (Cleveland State University, Cleveland, Ohio)

Delfour, M.C., "Hereditary Differential Systems Defined on a Compact Interval," Case Western Reserve University, June 1970. (Professor, University of Montreal, Canada)

Vlahutin, P., "Transient Stability of Power Systems," Case Western Reserve University, January 1971

Blankenship, Gilmer L., "Stability of Uncertain Systems," MIT, June 1971. (Professor, University of Maryland, College Park, Maryland)

Vandevenne, H.F., "Qualitative Properties of a Class of Infinite Dimensional Systems," MIT, February 1972. (Lincoln Laboratory, MIT)

Eckberg, Adrian E., "Algebraic System Theory with Applications to Decentralized Control," MIT, June 1973. (AT&T Bell Laboratories, Holmdel, NJ)

Johnston, Robert deB., "Linear Systems over Various Rings," MIT, June 1973. (Bell Northern Research Laboratories, Montreal, Canada)

Hager, W., "Rates of Convergence for Discrete Approximations to Optimal Control Problems," MIT, June 1974 (MIT Mathematics Department). (Professor, University of Florida, Gainesville, Florida)

Horowitz, Larry L., "Optimal Filtering of Gyroscopic Noise," MIT, June 1974. (Lincoln Laboratory, MIT)

Warren, Michael E., "On the Decoupling of Linear Multivariable Systems," MIT, June 1974. (University of Florida, Gainesville, Florida)

Galdos, Jorge I., "Information and Distortion in Filtering Theory," MIT, February 1975. (Lincoln Laboratory, MIT)

Platzman, Loren K., "Finite Memory Estimation and Control of Finite Probabilistic Systems," MIT, February 1977. (Georgia Institute of Technology, Atlanta, Georgia)

Akant, Adnan, "Segmented Approximation and Analysis of Stochastic Processes," MIT, June 1977. Fischer, Francis, Trees and Watts, New York

Young, S.K., "Convexity and Duality in Optimization Theory," MIT, July 1977 (MIT Mathematics Department). (Science Applications, Inc., McLean, Virginia)

Triantafyllou, Michael, "Design of the Dynamic Positioning System of a Drilling Vessel," July 1978 (Professor, Ocean Engineering, MIT)

Djaferis, Theodore, "Generalized Pole Assignment by Output Feedback and Solution of Linear Matrix Equations from an Algebraic Viewpoint," MIT, September 1979. (Associate Professor, University of Massachusetts, Amherst, Massachusetts)

Hildebrant, Richard R., "Scheduling and Flexible Machining Systems when Machines are Prone to Failure," MIT, May 1980 (MIT Department of Aeronautics and Astronautics). (C.S. Draper Laboratories, Cambridge, Massachusetts)

Ocone, Daniel L., "Topics in Non-linear Filtering Theory," MIT, May 1980 (MIT Mathematics Department). (Associate Professor, Rutgers University, New Brunswick, New Jersey)

Propp, Michael B., "The Thermodynamic Properties of Markov Processes," MIT, January 1985. (President, Adaptive Networks, Inc., Cambridge, Massachusetts)

Avniel, Yehuda, "Realization and Approximation of Stationary Stochastic Processes," MIT, May 1985 (Mitre Corporation, MA)

Marroquin, Jose Luis, "Probabilistic Solution of Inverse Problems," MIT, September 1985. (Professor, CIMAT, Mexico)

Flamm, David S., "Control of Delay Systems for Minimax Sensitivity," June 1986. (SRI, Palo Alto, California)

Gelfand, Saul, "Analysis of Simulated Annealing Type Algorithms," MIT, February 1987. (Associate Professor, Purdue University)

Richardson, Thomas J., "Scale Independent Piecewise Smooth Segmentation of Images Via Variational Methods," MIT, February, 1990. (Lucent, Bell Labs, Murray Hill, NJ)

Kulkarni, Sanjeev R., "Problems of Computational and Information Complexity in Machine Vision and Learning," MIT, July 1991. (Assistant Professor, Princeton University)

Akra, Mohamad, "Automated Text Recognition, MIT, August 1993. (Professor, American University, Beirut, Lebanon)

Eide, Ellen Marie, "A Linguistic Feature representation of the Speech Waveform," MIT, September 1993. (Research Staff, IBM, Watson Research Center)

Casadei, Stefano. "Robust Detection of Curves in Images," MIT, June 1995.

Branicky, Michael S. "Studies in Hybrid Systems: Modeling, Analysis, Control," MIT, June 1995 (Assistant Professor, Case Western Reserve University)

Tatikonda, Sekhar; "Control Under Communication Constraints," September 2000. (Assistant Professor, Yale University)

Sahai, Anant; "Anytime Information Theory," November 2000. (Assistant Professor, University of California at Berkeley)

Maurice Chu, "A Hierarchical Framework for Constructing Computationally Efficient Algorithms for Distributed Inference Problems," February 2003. (Parc, Inc., CA)

Sigurd, Karin, "Reconfiguration Control in Adaptive Networks," June 2003. (ABB, Switzerland)

Bazzi, Louay, "Minimum Distance of Error Correcting Codes versus Encoding Complexity, Symmetry, and Pseudorandomness," September 2003. (Amer. U of Beirut, Lebanon)

Ph.D. Theses: Reader (incomplete listing)

Glover, John D., "Control of Systems with Unknown but Bounded Disturbances with Application to the Load Frequency Control of Electric Power Systems," February 1971.

Tavernier, Hubert M., "Dynamic Linear Programming," February 1971.

Bertsekas, Dimitri P., "State Estimation and System Control for a Set-membership Description of Uncertainty," June 1971.

Galiana, Francisco D., "An Application of System Identification and State Prediction to Electric Load Modelling and Forecasting," June 1971.

McGarty, Terrance P., "Multiple Scatter Communication Channels," June 1971.

Geering, Hans P., "Optimal Control Theory for Non-Scalar-Valued Performance Criteria," September 1971.

Prado, Gervasio, "Optimal Sensor Location in Distributed Parameter Systems," September 1971.

Johnson, Timothy L., "Optimal Control of First-Order Distributed Systems," June 1972.

Lee, Stephen T., "Transient Stability Equivalents for Power System Planning," June 1972.

Masiello, Ralph D., "Adaptive Modelling and Control of Electric Power Systems," February 1973.

Chong, Chee-Yee, "On the Decentralized Control of Large-Scale Systems," June 1973.

Gruhl, James, "Minimizing Cost and Environment Impact on Electric Power System Operation," June 1973.

Willner, Dieter, "Observation and Control of Partially Unknown Systems," June 1973.

Wood, Jonathan R., "Aspects of Network Theory," June 1973.

Albuquerque, Jose P. A., "Model Sensitivity in Random Process Identification Performance," September 1973.

Glover, Keith, "Structural Aspects of System Identification," September 1973.

Marcus, Steven I., "Estimation and Analysis of Nonlinear Stochastic Systems," June 1975.

Kwong, Raymond H., "Structural Properties and Estimation of Delay Systems," September 1975.

Kam, Pooi Y., "Modeling and Estimation of Space-Time Stochastic Processes," February 1977.

Kohn, Wolf, "Distributed Hierarchical Automata with Some Applications to Genetics in Prokaryotes," September 1978.

Birdwell, John D., "Dynamic Structural Optimization and Related Aspects of Systems Reliability," June 1978.

Ledsham, William H., "Optimum Retrieval Techniques in Remote Sensing of Atmospheric Temperature, Liquid Water, and Water Vapor," June 1978.

Monauni, L.A., "Linear Dynamical Systems with Abstract State Spaces," September 1978.

Curlander, Paul J., "Quantum Limitations on Communication Systems," September 1979.

Teneketzis, Demosthenis, "Communication in Decentralized Control," January 1980.

Toldalagi, Paul M., "Adaptive Filtering Methods Applied to Satellite Remote Sensing of the Atmosphere for Meteorological Purposes," May 1980.

R. Pearson, "Velocity Feedback Control of Flexible Structures," February 1982.

Doerschuk, P.C., "Large-scale System Estimation Problems and Electrocardiogram Interpretation," May 1985.

Bordley, T.E., "Improved Paraxial Method for Modelling Underwater Acoustic Propagation," May 1985.

Yagle, A.E., "Layer-Stripping Solutions of Inverse Seismic Problems," May 1985.

Castineyra, I., "Routing in Unreliable Networks," June 1986.

Lee, W.H., "Robust Control Designs for Two Classes of Infinite Dimensional Systems," June 1986.

Lou, X.-C., "Time Scale Analysis Using Algebraic Approaches," February 1986.

Bunks, C.D., "Modelling for Interpretation and Analysis of Layered Data," February 1987.

Canny, John, "The Complexity of Robot Motion Planning," June 1987.

Gelfand, Saul, "Analysis of Simulated Annealing Type Algorithms," February 1987

Lamb, Richard, "Parametric Non-Linear Filtering," June 1987.

Shamma, Jeff S., "Analysis and Design of Gain Scheduled Control Systems," May 1988.

Chou, Kenneth C., "A Stochastic Modeling Approach to Multiscale Signal Processing," June 1991.

Picard, Rosalind, "Texture Modeling; Temperature Effects on Markov/Gibbs Random Fields," June 1991.

Shapire, Robert, "The Design and Analysis of Efficient Learning Algorithms," February 1991.

Telatar, Emre, “Multi-Access communications with Decision Feedback Decoding,” June 1992.

Sanger, Terence, “Theoretical Elements of Hierarchical Control in Vertebrate Motor Systems,” September 1993.

Zanghi, Kambiz, “Optimal Feedback Control Formulation of the Active Noise Cancellation Problem,” February 1994

Li, Ying, “Probabilistic Interpretations of Fuzzy Sets and Systems,” September 1994.

Fieguth, P.W., “Application of Multiscale Estimation to Large Scale Multidimensional Imaging and Remote Sensing Problems,” June 1995.

Tse, David, “Variable-rate Lossy Compression and Its Effects on Communication Networks,” February 1995.

Elia, Nicola, “Computational Methods for Multi-Objective Control,” September 1996.

Savari, Serap, “Variable-To-Fixed Length Codes for Sources with Known and Unknown Memory,” February 1996.

Chaudhari, Upendra V., “Probabilistic Pursuit, Classification, and Speech,” LIDS-TH-2399, September 1977.

Postdoctoral and Research Associates (incomplete listing)

Richard Vinter, Professor, Imperial College, London, England

Luciano Pandolfi, Professor, Polytechnic Institute of Turin, Turin, Italy

Giorgio Picci, Professor, University of Padova, Padova, Italy

Ettore Fornasini, Professor, University of Padova, Padova, Italy

Wolfgang Runggaldier, Professor, University of Padova, Padova, Italy

Hans Schumacher, Research Scientist, Math. Centrum, Amsterdam, Holland

Ramakrishna Akella, Research Associate, Massachusetts Institute of Technology

Antonio Moro, Associate Professor, University of Florence, Florence, Italy

G. Tadmor, Associate Professor, Northeastern University

P. Dupuis, Professor, Brown University

Jeff S. Shamma, Professor, University of Texas at Austin

Ofer Zeitouni, Professor, Technion, Israel

Denis Mustafa, Lecturer, Oxford University

Pietro Perona, Professor, California Institute of Technology

Sandro Zampieri, Associate Professor, University of Padova

Peter Doerschuk, Associate Professor, Purdue University

Michael Branicky, Assistant Professor, Case Western Reserve University

Stefano Casadei, Post-doctoral Associate, MIT (currently Research Associate)

Nicola Elia, Assistant Professor, Iowa State University

Anthony Yezzi, Assistant Professor, Georgia Institute of Technology

PUBLICATIONS

1965

Mitter, S.K., L. Pun, and J. Peschon, "Computer Process Control," Chapter IX Disciplines and Techniques of Systems Control, Ed. J. Peschon. Blaisdell, January 1965.

1966

Journal Papers and Proceedings

Mitter, S.K., "Successive Approximation Methods for the Solution of Optimal Control Problems," *Automatica*, 3:135-149, 1966. Proceedings of 3rd IFAC Congress, June 1966.

Invited Lectures

Control Theory, Center for Control Science, University of Minnesota, April 1966.

1967

Papers in Refereed Journals

Lasdon, L.S., S.K. Mitter, and A.D. Waren, "The Conjugate Gradient Method for Optimal Control Problems," *IEEE Transactions on Automatic Control*, AC-12 (2): 132-38, April 1967.

Mitter, S.K., "Theory of Inequalities and the Controllability of Linear Systems," Conference on Mathematical Theory of Control, University of Southern California, Los Angeles, CA, July 1967. In *Mathematical Theory of Control*. Eds: A.V. Balakrishnan and L.W. Neustadt. New York: Academic Press, 1967.

Proceedings of Refereed Conferences

Mitter, S.K., T.E. DyLiacco, R. Babickas, and T.J. Kraynack, "Multi-level Approach to Power System Decision Problems--The Optimizing Level," Proceedings of Power Industry Computer Applications Conference, April 1967, pp. 221-24.

DyLiacco, T.E. and S.K. Mitter, "Multi-level Approach to the Control of Interconnected Power Systems," Proceedings of IFAC-IFIPS Conference on Process Control, June 1967.

Invited Lectures

"Systems and Control Theory," Centre for Computing and Automation, Imperial College, London, January 1967.

"Decomposition of Optimal Control Problems," Summer School on Mathematical Systems Theory and Economics, Italy, June 1967.

"A Theory of Modal Control," School of Engineering and Applied Science, Yale University, September 1967.

1968

Papers in Referred Journals

Simon, J.D. and S.K. Mitter, "A Theory of Modal Control," *Information and Control*, 13 (4):316-53, October 1968.

Invited Lectures

“Reachability of Perturbed Systems and Min-Sup Problems,” Washington University, St. Louis, Missouri, 1968.

“Aspects of Control Theory,” Electrical Engineering Department, Indian Institute of Science, Bangalore, India.

1969

Papers and Proceedings

Mitter, S.K., and G.A. Phillipson, “State Identification of a Class of Distributed Parameter Systems,” Proceedings of 4th IFAC Conference, June 1969.

Mitter, S.K., and J.D. Simon, “Synthesis of Transfer Function Matrices with Invariant Zeroes,” Correspondence Item. IEEE Transactions on Automatic Control, AC-14 (4):420-21, August 1969.

Delfour, M.C. and S.K. Mitter, “Reachability of Perturbed Systems and Min-Sup Problems,” SIAM Journal on Control, 7(4):521-33, November 1969.

Mitter, S.K., and G.A. Phillipson, “Numerical Solution Identification Problem for a Class of Distributed Parameter Systems,” Second International Conference on Computing Methods in Optimization Problems. In Computing Methods in Optimization Problems. Ed. A.V. Balakrishnan, L.A. Zadeh, and L.W. Neustadt. New York: Academic Press, 1969.

Invited Lectures

“Controllability of Linear Systems,” Mathematics Department, Cleveland State University, Cleveland, Ohio, February 1969.

“State Estimation of Distributed Parameter Systems,” Electrical Engineering Department, Purdue University, Lafayette, Indiana, April 1969.

“Optimal Control of Distributed Parameter Systems,” Current Trends in Control Theory, Washington University, St. Louis, Missouri, August 1969.

“Aspects of Numerical Solution of Optimal Control Problems,” Conference on Computerized Electronics, Cornell University, Ithaca, NY, August 1969. Abstract published in proceedings of conference.

“A Result in Linear System Theory,” 7th Annual Allerton Conference, October 1969.

1970

Papers and Proceedings

Heins, W. and S.K. Mitter, “Conjugate Convex Functions, Duality and Optimal Problems (I): Systems Governed by Ordinary Differential Equations,” Information Science, 2(2):211-43, 1970.

Licht, B.W. and S.K. Mitter, “Computational Experiments in Continuous Nonlinear Filtering,” Proceedings of Fourth Annual Princeton Conference on Information Science and Systems, March 1970.

Mitter, S.K., "Optimal Control of Distributed Parameter Systems," Proceedings of the Joint Automatic Control Conference, 1969. Complete paper published in booklet, Control of Distributed Parameter Systems, American Society of Mechanical Engineers, August 1970.

Invited Lectures

"Control and Information Problems of Large Scale Systems," Four lectures at Institute de Recherche d'Informatique et d'Automatique, France, January 1970.

"Controllability and Pole Assignment for Discrete Time Systems Defined Over Arbitrary Fields," Washington University, St. Louis, Missouri, January 1970."

"Algebraic Aspects of Linear Systems," Ecole Centrale, Paris, February 1970.

"Decentralization and Decomposition of Large-Scale Systems," Mathematics Department, Universite de Paris, February 1970.

"Multi-level Control Systems," Laboratoire pour l'Automatique, Universite de Grenoble, France, February 1970.

"Optimal Control of Distributed Parameter Systems," two lectures, Centre for Computing and Automation, Imperial College, London, February 1970.

"Discrete Approximations for Control Problems for Partial Differential Equations," invited address, Joint Automatic Control Conference, Atlanta, Georgia, June 1970.

"Hereditary Differential Systems," two lectures, Institute for Fluid Dynamics and Applied Mathematics, University of Maryland, July 1970.

"Control of Hereditary Differential Systems," Electrical Engineering Department, University of Toronto, September 1970.

"Control of Systems with Time Delays," Systems Research Center, Case Western Reserve University, Cleveland, Ohio, November 1970.

"Hereditary Differential Systems with Non-continuous Initial Data," Center for Dynamical Systems, Brown University, Providence, Rhode Island, December 1970.

1971

Papers in Refereed Journals

Mitter, S.K., and R. Foulkes, "Controllability and Pole-Assignment for Discrete Time Linear Systems Defined over Arbitrary Fields," SIAM Journal on Control, 9(1):1-7, February 1971.

Delfour, M.C. and S.K. Mitter, "Systemes d'equations Differentielles Hereditaires a Retards Fixes. Theorems d'existence et d'unicite," Comptes Rendus Academie Sciences Paris, February 1971, pp. 382-85.

Delfour, M.C. and S.K. Mitter, "Systemes d'equations Differentielles Hereditaires a Retards Fixes. Une Classes de Systemes Affines et le Probleme du Systeme Adjoint," Comptes Rendus Academie Sciences Paris, April 1971, pp. 1109-21.

Delfour, M.C. and S.K. Mitter, "Le Controle Optimal de Systemes Gouvernes par des Equations Differentielles Hereditaires Affines," Comptes Rendus Academie Sciences Paris, June 1971, p. 1715-18.

Mitter, S.K., and J.C. Willems, "Controllability, Observability, Pole Allocation and State Reconstruction," IEEE Transactions on Automatic Control, AC-16 (6):582-95, December 1971.

Proceedings of Refereed Conferences

Mitter, S.K., and D. Bertsekas, "Steepest Descent for Optimization Problems with Nondifferentiable Cost Functionals," Proceedings of the Fifth Annual Conference on Information Science and Systems, January 1971, pp. 347-51.

Invited Lectures

"Hereditary Differential Systems with Non-continuous Data," Electrical Engineering Department, University of Southern California, Los Angeles, January 1971.

"Stability and Convergence of Discretization Schemes for Optimal Control Problems," invited paper, Hawaii Conference on Systems Science, January 1971.

"Current Trends in Control Theory," Washington University, St. Louis, Missouri, August 1971.

1972

Papers in Refereed Journals

Delfour, M.C., and S.K. Mitter, "Controllability, Observability and Optimal Feedback Control of Affine Hereditary Differential Systems," SIAM J. on Control, 10: 298-238, May 1972.

Mitter, S.K., and M.C. Delfour, "Controllability and Observability for Infinite-Dimensional Systems," SIAM J. on Control, 10(2):328-333, May 1972.

Delfour, M.C. and S.K. Mitter, "Hereditary Differential Systems with Constant Delays I: General Case," J. of Differential Equations, 12(2):213-35, September 1972.

Proceedings and Other Publications

Mitter, S.K., and M.C. Delfour, "Optimal Control of Affine Hereditary Differential Systems," Proceedings of the 5th IFAC Congress, 1972.

Bensoussan, A. and M.C. Delfour and S.K. Mitter, "Optimal Filtering for Linear Stochastic Hereditary Differential Systems," Proceedings 1972 IEEE Conference on Decision and Control, December 1972, pp. 378-80.

Mitter, S.K., and F.C. Schweppe, "Hierarchical System Theory and Electric Power Systems," Proceedings of the Symposium on Real-Time Control of Electric Power Systems, Baden, Switzerland: Brown, Boveri Co., Ltd., 1971. Reprinted by Elsevier Publishing Co., Amsterdam, 1972.

Mitter, S.K., "The Infinite Time Quadratic Cost Problem for Certain Classes of Infinite Dimensional Control Systems," Delay and Functional Differential Equations and their Applications, New York: Academic Press, 1972, pp. 269-80.

Invited Lectures

Lectures at Institut de Recherche d'Informatique et d'Automatique, Versailles, France (as part of joint research program sponsored by NSF), January 1972.

Seminar at the University of Montreal, Centre de Recherches Mathematiques, Canada, February 1972.

Park City Symposium on Functional Differential Equations, sponsored by University of Utah, March 1972.

Seminar at the Institute of Automatic Control, University of Padua, Italy, June 1972.

Symposium on Functional Differential Equations, Control and Stability, University of Warwick, England, June 1972.

1973

Bertsekas, D.P., and S.K. Mitter, "A Descent Numerical Method for Optimization Problems with Nondifferentiable Cost Functionals," SIAM Journal on Control, 11(4):637-52, November 1973.

Delfour, M.C., and S.K. Mitter, "Control of Affine Systems with Memory," Proceedings of the 5th IFIP Conference on Optimization Techniques, Springer-Verlag, 1973.

1974

Invited Lectures

"Control of Affine Hereditary Differential Systems," Mathematics Institute, University of Koln, Germany, January 1974.

"The Infinite-time Quadratic Cost Problem for Linear Hereditary Differential Systems," Institute for Automatic Control, Technical University, Hannover, February 1974.

Lecturer at University of Groningen, Dutch National Science Foundation, Lecturer in Applied Mathematics, Technical University of Eindhoven, University of Twente, February 1974.

"Dynamical Systems and Stability," Institute for Theoretical Physics, Free University of Berlin, February 1974.

"Control Estimation Problems for Functional Differential Equations," Mathematics Institute, University of Florence, May 1974.

"Duality in Optimal Control," Mathematics Institute, University of Venice, May 1974.

1975

Papers in Refereed Journals

Mitter, S.K., and M.E. Warren, "A Necessary Condition for Decoupling Multivariable Systems," International Journal on Control, 21(2):177-92, 1975.

Delfour, M.C., S.K. Mitter, and C. McCalla, "Stability and the Infinite-Time Quadratic Cost Problem for Linear Hereditary Differential Systems," *SIAM Journal on Control*, 13(1):48-88, January 1975.

Mitter, S.K., and M.E. Warren, "Generic Solvability of Morgan's Problem," *IEEE Transactions on Automatic Control*, 268-69, April 1975.

Delfour, M.C., and S.K. Mitter, "Hereditary Differential Systems with Constant Delays, II. A Class of Affine Systems and the Adjoint Problem," *Journal of Differential Equations*, 18(1):18-28, May 1975.

Proceedings and Other Publications

Mitter, S.K., D.E. Gustafson, and A. Akant, "Feature Selection for Diagnosis of Vectorcardiograms," *Proceedings of the 1975 Decision and Control Conference*, 1975.

Mitter, S.K., and R.B. Vinter, "Filtering for Linear Stochastic Hereditary Differential Systems," *Lecture Notes in Economics and Mathematical Systems*, Vol. 107. *Control Theory, Numerical Methods and Computer Modelling*. New York: Springer-Verlag, 1975, pp. 1-21.

Invited Lectures

Lectures at Institut de Recherche d'Informatique et d'Automatique, Versailles, France, on Systems Theory, May and June 1975.

"Recent Results in Infinite Dimensional Systems Theory," Faculty of Engineering, University of Florence, Italy, July 1975.

"Recent Results in Control of Hereditary Differential Systems," Mathematical Institute, Udine, University of Florence, Italy, July 1975.

"Lagrange Duality Theory for Linear Infinite Dimensional Systems," Center for Mathematical System Theory, University of Florida, Gainesville, Florida, November 1975.

"Realization Theory for Linear Infinite Dimensional Systems," Center for Mathematical System Theory, University of Florida, November 1975.

"Lagrange Duality Theory for Optimal Control Problems," Electrical Engineering Department, University of Maryland, December 1975.

1976

Books

Mitter, S.K., and Y.C. Ho (editors), *Directions in Large Scale Systems*. New York: Plenum Press, 1976.

Mitter, S.K., and G. Marchesini (editors), *Mathematical Systems Theory*, Udine 1975, *Lecture Notes in Economics and Mathematical Systems*. Managing Editors: M. Beckman and H.P. Kunzi. *Systems Theory 131*. Heidelberg, Germany: Springer-Verlag, 1976.

Papers in Refereed Journals

Hager, W.W. and S.K. Mitter, "Lagrange Duality Theory for Convex Control Problems," *SIAM Journal on Control and Optimization*, 14(5):843-56, August 1976.

Proceedings of Refereed Conferences

Mitter, S.K., A. Bensoussan, and M.C. Delfour, "Representation Theory for Linear Infinite Dimensional Continuous Time Systems," Lecture Notes in Economics and Mathematical Systems, Vol. 131, Systems Theory, Mathematical Systems Theory, Proceedings of the International Symposium, Springer-Verlag, 1976, pp. 204-225.

Mitter, S.K., and L. Horowitz, "An Example of an Infinite Dimensional Filtering Problem: Filtering for Gyroscopic Noise," Proceedings of the 1976 IEEE Conference on Decision and Control, Including the 15th Symposium on Adaptive Processes, December 1976, pp. 764-773.

Mitter, S.K., and T.E. Djaferis, "Exact Solution to Lyapunov's Equation Using Algebraic Methods," Proceedings of the 1976 IEEE Conference on Decision and Control, Including the 15th Symposium on Adaptive Processes, December 1976, pp. 1194-1200.

1977

Papers in Refereed Journals

Mitter, S.K., M.E. Womble, J.S. Halliday, M.C. Lancaster, and J.H. Triebwasser, "Data Compression for Storing and Transmitting ECG's/VCG's," Proceedings of the IEEE, 65(5):702-06, May 1977.

Proceedings of Refereed Conferences

Mitter, S.K., D.E. Gustafson, A.S. Willsky, A. Akant, J.Y. Wang, P. Doerschuk, M.E. Womble, M.C. Lancaster, and J.H. Triebwasser, "A Prototype System for Automated Interpretation of Vectorcardiograms," Proceedings of the JACC, 1977.

Mitter, S.K., and S.K. Young, "Quantum Detection and Estimation Theory," Proceedings 15th Annual Allerton Conference on Communication, Control, and Computing, 1977, pp. 62-67.

Invited Lectures

"Duality Theory for Optimal Control Problems," Department of Applied Science, Yale University, New Haven, Connecticut, February 1977.

"Infinite Dimensional Systems and Quantum Communication Theory," Department of Systems Science and Mathematics, Washington University, St. Louis, Missouri, January and May 1977.

"The Linear Quadratic Gaussian Control Problem for Systems with Time Delay," Clarkson College of Technology, Potsdam, New York, October 1977.

Eight lectures on Mathematical Problems of Quantum Communication and Quantum Fields, University of Maryland, December 1977 - February 1978.

1978

Proceedings of Referred Conferences

Mitter, S.K., and P. Toldalagi, "Variable Metric Methods and Filtering Theory," Lecture Notes in Economics and Mathematical Systems, Vol. 162. Systems Theory, Recent

Developments in Variable Structure Systems, Economics and Biology. New York: Springer-Verlag, 1978, pp. 214-21.

Invited Lectures

Lectures on Mathematical Problems of Quantum Communication and Quantum Fields, University of Maryland, December 1977 - February 1978.

“Quantum Detection and Estimation Theory,” Workshop on Control Theory and Optimization, University of Montreal, Canada, May and June 1978.

“Some Abstract Linear Programs Arising in Quantum Communication Problems,” III Symposium uber Operations Research, Universitat Mannheim (WH), September 1978.

“Recent Results in Nonlinear Filtering,” 1978 Bordeaux Conference on Algebraic and Geometric Methods in Systems Theory, Bordeaux, France, September 1978.

“Optimal Control,” Autumn course on Systems Analysis, International Centre for Theoretical Physics, Trieste, Italy, October 1978.

“Algebraic Approach to Linear Matrix Equations,” College of Charleston, South Carolina, AMS Meeting, November 1978.

“Quantum Estimation Theory,” International Symposium on Systems Optimization and Analysis, IRIA, France, December 1978.

1979

Journal Papers and Other Publications

Mitter, S.K., “On the Analogy Between Mathematical Problems of Non-Linear Filtering and Quantum Mechanics,” *Ricerche di Automatica*. Special Issue on System Theory and Physics, 10(2):163-216, December 1979.

Mitter, S.K., and S.K. Young, “Quantum Estimation Theory,” *Lecture Notes in Control and Information Sciences*. Ed. A.V. Balakrishnan and M. Thoma. Vol. 14. International Symposium on Systems Optimization and Analysis. Ed. A. Bensoussan and J.L. Lions. New York: Springer-Verlag, 1979.

Proceedings of Refereed Conferences

Mitter, S.K., S.I. Marcus, and D. Ocone, “Finite Dimensional Nonlinear Estimation for a Class of Continuous and Discrete Time Systems,” *Proceedings of the International Conference on Analysis and Optimization of Stochastic Systems*, Academic Press, 1979.

Mitter, S.K., “Modelling for Stochastic Systems and Quantum Fields,” *Proceedings of the 1978 IEEE Conference on Decision and Control*, 1979, pp. 1012-17.

Mitter, S.K., and D. Ocone, “Multiple Integral Expansions for Nonlinear Filtering,” LIDS Report P-943, *Proceedings of the 18th IEEE Conference on Decision and Control*, 1979.

Mitter, S.K., and D.F. Allinger, “Recent Results in Non-Linear Filtering,” LIDS Report P-942, *Proceedings of the 18th IEEE Conference on Decision and Control*, 1979.

Mitter, S.K., and T.E. Djaferis, "The Generalized Pole Assignment Problem," LIDS Report P-944, Proceedings of the 18th IEEE Conference on Decision and Control, 1979.

Invited Lectures

"Modelling for Stochastic Systems and Quantum Fields," 17th IEEE Conference on Decision and Control, San Diego, California, January 1979.

"Topics in Nonlinear Filtering," Workshop on Infinite Dimensional Stochastic Systems, University of California, Los Angeles, California, March 1979.

"Estimation Theory and Quantum Physics," CBMS Regional Conference on Geometric Methods in Systems Theory, University of California, Davis, California, March 1979.

"Systems with Time Delay," Seminar/Workshop on Algebraic and Geometric Methods in Linear Systems Theory, Harvard University, Cambridge, Massachusetts, June 1979.

"Recent Results in Non-linear Filtering," Istituto di Elettrotecnica ed Elettronica, Udine, Italy, July 1979.

"Recent Results in Non-linear Filtering," 1979 International Conference on Information Sciences and Systems, University of Patras, Patras, Greece.

"Optimal Control Theory," Series of lectures at Tata Institute of Fundamental Research, Bombay, India, July and August 1979.

"Infinite Dimensional Mathematical Programming Arising in Communication and Control," 10th International Symposium on Mathematical Programming, Montreal, Canada, August 1979.

"Observed Stochastic Systems and Quantum Physics," International Seminar on Mathematical Theory of Dynamical Systems and Microphysics, CISM, Udine, Italy, September 1979.

"Nonlinear Filtering Theory," CNR Meeting on Mathematical Control Theory, University of Trento, Italy, October 1979.

"On the Analogy Between Certain Mathematical Problems of Nonlinear Filtering and Quantum Physics," Clarkson College of Technology, Potsdam, New York, November 1979.

"Recent Results in Nonlinear Filtering," 18th IEEE Decision and Control Conference, Ft. Lauderdale, Florida, December 1979.

1980

Papers in Refereed Journals

Mitter, S.K., "Filtering Theory and Quantum Fields," Asterisque 75-76 Analyse des Systems, Bordeaux, September 11-16, 1978. Societe Mathematique de France, 1980, pp. 199-205.

Marcus, S.I., S.K. Mitter and D. Ocone, "Finite Dimensional Nonlinear Estimation for a Class of Continuous and Discrete Time Systems." In Analysis and Optimization of

Stochastic Systems. Eds. O.L.R. Jacobs, et al. New York-London: Academic Press, 1980, pp. 387-408.

Invited Lectures

“Some Problems in Nonlinear Filtering,” First CAS Workshop on Nonlinear Circuits and Systems, Rice University, Houston, Texas, January 1980.

“Recent Developments in Nonlinear Filtering,” Johns Hopkins University, Baltimore, Maryland, March 1980.

“Nonlinear Filtering and Hamilton Jacobi Theory,” University of Maryland, March 1980.

1981

Papers in Refereed Journals

Allinger, Deborah F. and S.K. Mitter, “New Results on the Innovations Problem for Non-Linear Filtering,” Stochastics, 1981, Vol. 4, pp. 339-348.

Proceedings of Referred Conferences

Mitter, S.K., “Remarks on Pathwise Nonlinear Filtering,” In Proceedings on the Santa Margherita Conference on Optimization, December 1981. Proceedings to be published by Springer-Verlag.

Invited Lectures

Two lectures in Annual Systems Theory and Operations Research Meeting, Luteran, Holland, January 14-16, 1981.

Nonlinear Filtering and Stochastics Mechanics, Istituto Matematico Guido Castelnuovo, University of Rome, January 21, 1981.

Introduction to Linear Filtering, Scuola Normale, Pisa, Italy, January 30, 1981.

Introduction to Non-linear Filtering, Scuola Normale, Pisa, Italy, March 5, 1981.

Three lectures at Tata Institute of Fundamental Research, School of Mathematics, Bombay, India, February 10-18, 1981.

“Journées sur des Filtrage Non-Lineaire,” LAAS-Toulouse, France, March 11-12, 1981.

“Kalman Filtering Revisited,” Istituto di Automatica, Università di Roma, Italy, March 27, 1981.

Four lectures on Non-linear Filtering, Istituto Matematico Guido Castelnuovo, Univ. di Roma, Italy, April 28-30, 1981.

Symposium on Stochastic Problems in Mechanics and Non-linear Filtering (sponsored by CNR), Istituto di Meccanica Razionale, Politecnico di Torino, Italy, May 28-30, 1981.

“System Theory and Lax-Phillips Scattering Theory,” Workshop on Linear and Non-linear Systems, Bielefeld-Rome, Italy, June 22-July 4, 1981.

Six lectures on Nonlinear Filtering, CIME School on Nonlinear Filtering and Stochastic Control, Cortona, Italy, July 1-10, 1981.

“Recent Developments in the Theory of Non-linear Filtering,” International Symposium on the Mathematical Theory of Networks and Systems, Santa Monica, California, August 5-7, 1981.

“Filtering Theory,” Annual Meeting of the Italian Mathematical Union, Rimini, Italy, September 29, 1981.

1982

Papers in Refereed Journals

Djaferis, T.E., and S.K. Mitter, “Algebraic Methods for the Study of Some Linear Matrix Equations,” *Linear Algebra and Applications*, 44:125-42, 1982.

Fleming, W., and S.K. Mitter, “Optimal Control and Pathwise Nonlinear Filtering of Degenerate Diffusions,” *Stochastics*, 8:63-78, 1982.

Lindquist, A., S.K. Mitter, and G. Picci, “Toward a Theory of Nonlinear Stochastic Realization,” In *Springer Lecture Notes in Control and Information Sciences*, 39, 1982, pp. 175-89.

Mitter, S.K., “Existence and Non-existence of Finite Dimensional Filters,” *Rendiconti del Seminario Matematico, Fascicolo Speciale*, July 1982, pp. 173-88.

Invited Lectures

Three lectures on Nonlinear Filtering and Related Topics, NATO Advanced Study Institute on Nonlinear Stochastic Problems, Algarve, Portugal, May 16-28, 1982.

1983

Books

Mitter, S.K., and A. Moro (editors), *Nonlinear Filtering and Stochastic Control*. Springer Lecture Notes in Mathematics. Vol. 972. Berlin-New York: Springer-Verlag, 1983.

Papers in Refereed Journals

Mitter, S.K., “Lectures on Nonlinear Filtering and Stochastic Control,” In *Springer Lecture Notes in Mathematics*, Vol. 972, 1983, pp. 170-207.

Mitter, S.K., and T.E. Djaferis, “Some Generic Invariant Factor Assignment Results Using Dynamic Output Feedback,” *Linear Algebra and Applications*, 50:103-31, 1983.

Mitter, S.K., “Approximations in Nonlinear Filtering.” In *Nonlinear Stochastic Problems*. Eds. R.C. Bucy and J. Moura. Dordrecht: Reidel Publishing Co., 1983, pp. 339-45.

Mitter, S.K., “Geometric Theory of Nonlinear Filtering,” In *Outils et Modeles Mathematiques pour l'Automatisme*, Vol. 3. Paris: Centre National de la Recherche Scientifique, 1983, pp. 37-60.

Invited Lectures

“Recent Developments in Filtering Theory,” Optimization Days, McGill University, Montreal, Canada, May 12, 1983.”

“Stochastic Variational Problems,” Berkeley-Ames Conference on Nonlinear Problems in Control and Fluid Dynamics, Berkeley, California, May 31-June 10, 1983.

Lectures on Pathwise Nonlinear Filtering, Scuola Normale Superiore, Pisa, Italy, June 1983.

“Une Contre-exemple dans la Filtrage Trajectorielle,” Institut National de Recherche en Informatique et Automatique, Sofia-Antipolis, France, June 27, 1983.

Two lectures on Scattering and Inverse Scattering, Mathematische Centrum, Amsterdam, Holland, August 8-12, 1983.

Two lectures on Estimation Theory and Mathematical Physics, Third International Seminar on Mathematical Theory of Dynamical Systems and Microphysics, Udine, Italy, September 4-9, 1983.

“A Counterexample in Pathwise Nonlinear Filtering,” Italian National Meeting on Filtering and Stochastic Control, Padova, Italy, September 12-15, 1983.

“The Approximation Problem for Nonlinear Filtering,” SIAM National Meeting, Norfolk, Virginia, November 6-8, 1983.

“Reflection Positive Gaussian Processes and Scattering Theory,” Meeting on Operator Theory and Systems Theory, University of Maryland, College Park, Maryland, November 17-19, 1983.

1984

Papers in Referred Journals

Mitter, S.K., and Stephen K. Young, ‘Integration with Respect to Operator-Valued Measures with Applications to Quantum Estimation Theory,’ LIDS Report P-1278, Annali di Matematica Pura ed Applicata, 1984. Vol. 137, pp. 1-39.

Gershwin, S.B., R.R. Hildebrant, R. Suri, and S.K. Mitter, ‘A Control Theorist's Perspective on Recent Trends in Manufacturing Systems,’ LIDS Report R-1408, Proceedings of the 23rd IEEE Conference on Decision and Control, 1984.

Invited Lectures

“Systems Theory and Mathematical Physics,” IEEE International Conference on Systems, Man and Cybernetics, Bombay, India, January 3, 1984.

“Scattering Theory of Adamjan and Arov and its Role in Estimation Theory,” AMS Summer Conference on Linear Algebra and Linear Systems Theory, Bowdoin College, Maine, July 30-August 3, 1984.

“Stochastic Variational Problems,” International Conference on Stochastic Optimization, Kiev, USSR, September 10-15, 1984.

1985

Invited Lectures

“Mathematical Physics and Stochastic Systems,” 3rd Bad-Honeff Conference on Stochastic Differential Systems, Bonn, West Germany, June 1985.

“Markov Random Fields and Problems in Computational Vision,” IIASA Workshop, Budapest, Hungary, July 1985.

“Markov Random Fields and Problems in Computational Vision,” 15th Conference on Stochastic Processes and their Applications, Nagoya, Japan, July 1985.

(with S. Gelfand), “Analysis of Simulated Annealing for Optimization,” IEEE Conference on Decision and Control, Florida, December 1985.

1986

Papers

Gershwin, S.B., Hildebrant, R.R., and S.K. Mitter, “A Control Perspective on Recent Trends in Manufacturing Systems,” IEEE Control Systems Magazine, Vol. 6, No. 2, April 1986.”

Mitter, S.K. “Estimation Theory and Statistical Physics,” Lecture Notes in Mathematics: Stochastic Processes and Their Applications, New York, Berlin: Springer-Verlag, 1986.

Gelfand, S.B. and S.K. Mitter, “Simulated Annealing,” Advanced School on Stochastics in Combinatorial Optimization, eds. G. Andreatta, F. Mason, P. Serafini, pp. 1-51, World Scientific.

Technical Report

Moura, J.M.F. and S.K. Mitter, “Identification and Filtering: Optimal Recursive Maximum Likelihood Approach,” Laboratory for Information and Decision Systems Report LIDS-P-1587, August 1986.

Invited Lectures

“Stochastic Optimization Algorithms,” International Conference on Calculus of Variations and Control Theory (in honor of L. Tonelli), Scuola Normale Superiore, Pisa, Italy, March 1986.

Lecture at the Workshop on Stochastic Differential Systems, Institute for Mathematics and its Applications, Minneapolis, Minnesota, June 1986.

“Min-Max Optimization for Rational Plants with Input Delay,” Conference on Modelling and Adaptive Control, Sopron, Hungary, July 1986.

“Statistical Modelling of Images,” IIASA Workshop “From Data to Model,” Laxenburg, Austria, September 1986.

“Some Min-Max Optimization Problems in Infinite Dimensional Control Systems,” 2nd Workshop on the Control of Systems Governed by Partial Differential Equations, Val David, Quebec, Canada, October, 1986.

“Image Analysis by Probabilistic Methods,” Columbia University, Department of Electrical Engineering, November 1986.

Lecture at the Workshop on Modelling, Robustness and Sensitivity Reduction in Control Systems, Groningen, the Netherlands, December 1986.

1987

Other Publications

Mitter, S.K., “Nonlinear Filtering and Quantum Physics”, in Encyclopedia of Systems and Control, New York: Pergamon Press, 1987.

Papers

Flamm, David S. and S. K. Mitter, “H Sensitivity Minimization for Delay Systems: Part I, “Systems and Control Letter, Vol. 9, No. 1, June 1987.

Marroquin, Jose L., S.K. Mitter and Tomaso Poggio, “Probabilistic Solution of Ill-Posed Problems in Computational Vision,” Journal of the American Statistical Association, pp. 76-89, March 1987.

Technical Report

Ljung, Lennart, S.K. Mitter and Jose M. F. Moura, “Optimal Recursive Maximum Likelihood Estimation,” LIDS Report P-1660, March 1987.

Invited Lectures

Lectures at the Evolution Equation Half-Year Program, Scuola Normale Superiore, Pisa, Italy, January to June, 1987.

“Stochastic Quantization,” Fifth Army Conference on Applied Mathematics and Computing, West Point, June, 1987.

“Stochastic System Theory and Statistical Physics,” First International Conference on Advances in Communication and Control Systems (in honor of A.V. Balakrishnan), June, 1987.

“On Stochastic Quantization,” First International Conference on Industrial and Applied Mathematics, Paris, July, 1987.

(with L. Ljung and J. Moura), “Recursive Maximum Likelihood: Case Study,” IFAC’87, Munich, July 1987.

Invited Lectures

“Control of Infinite Dimensional Systems from a Frequency Domain Viewpoint” 13th IFIP Conference on System Modelling and Optimization, Tokyo, Japan, August 31 - September 4, 1987.

1988

Papers

Fagnani, F., D.S. Flamm and S.K. Mitter, "Some Min-Max Optimization Problems in Infinite-Dimensional Control Systems," *Modelling, Robustness and Sensitivity Reduction in Control Systems*, New York, Berlin: Springer-Verlag, 1988.

Borkar, V.S., R.T. Chari and S.K. Mitter, "Stochastic Quantization of Field Theory in Finite and Infinite Volume," *Journal of Functional Analysis*, Vol. 81, No. 1, November 1988.

Ohta, Y., G. Tadmor and S.K. Mitter, "Sensitivity reduction over a frequency band," *International Journal of Control*, 1988, Vol. 48, No. 5, pp. 2129-2138.

Zames, G. and S.K. Mitter, "A note on essential spectra and norms of mixed Hankel-Toeplitz operators," *Systems & Control Letters*, Vol. 10, No. 3, March 1988.

Flamm, David S. and S.K. Mitter, "Approximation of Ideal Compensators for Delay Systems," *Linear Circuits, Systems and Signal Processing: Theory and Application*, ed. C.I. Byrnes, C.F. Martin and R.E. Saeks, New York: North-Holland, 1988.

Invited Lectures

"Stochastic Quantization," *Calculus of Variations and Stochastic Processes*, a Conference in honor of Wendell H. Fleming, April 15-16, 1988.

"Variational and Probabilistic Problems in Image Analysis, Part I and Part II," Summer Program on Signal Processing, Institute for Mathematics and Its Applications, Minneapolis, Minnesota, July 1988.

"Statistical and Quantum Physics and Stochastic System Theory," Third International Workshop on the Bellman Continuum, June 13, 1988, Sophia-Antipolis, France.

1989

Papers

Borkar, V.S. and Mitter, S.K., "Lattice Approximation in the Stochastic Quantization of $(\mathbb{F}^4)^2$ Fields," *Proceedings, Meeting on Stochastic Partial Differential Equation and Applications II*, Trento, Italy, February 1-6, 1988, *Lecture Notes in Mathematics: Stochastic Partial Differential Equations and Applications II*, Berlin: Springer-Verlag, 1989.

Mitter, S.K., "Stochastic Quantization," *Proceedings, Third International Workshop on the Bellman Continuum*, June 1988, *Lecture Notes in Control and Information Sciences: Modeling and Control of Systems*, ed. A. Blaquiere, New York, Berlin: Springer-Verlag, 1989.

Gelfand, S.B. and S.K. Mitter, "Simulated Annealing with Noisy or Imprecise Energy Measurements," *Journal of Optimization Theory and Applications*, Vol. 61, No. 3, June 1989.

Mitter, S.K. and Y. Avniel, "Scattering Theory, Gaussian Processes and Unitary Dilations," *Three Decades of Mathematical System Theory. A Collection of Surveys at the Occasion of the Fiftieth Birthday of Jan C. Willems*. *Lecture Notes in Control and Information Sciences* Vol 135, Springer Verlag, Berlin, 1989.

Invited Presentations

“Dynamic Renormalization Group Method for Stochastic Fields,” Imperial College Workshop on Applied Stochastic Analysis, April 1989.

“Local and Global Variational Problems for Boundary Detection,” LMS Durham Symposium on Image Analysis, University of Strathclyde, Glasgow, July 1989.

“Some mathematical problems in machine vision,” invited plenary talk, Venice-1/Symposium on Applied and Industrial Mathematics, October 1989; to be published as Venice 1989: The State of the Art in Applied and Industrial Mathematics, Dordrecht, the Netherlands: Kluwer, 1990.

“A Theory of Boundary Detection,” Computer and Vision Research Center, University of Texas, Austin, November 1989.

“Hybrid Control in the Nematode,” IEEE Conference on Decision and Control, December 1990.

1990

Books Edited

Auslander, L., T. Kailath and S.K. Mitter (editors), Signal Processing, Part I: Signal Processing Theory, New York: Springer-Verlag, 1990.

Papers

Kulkarni, S.R., S.K. Mitter and T.J. Richardson, “An Existence Theorem and Lattice Approximations for a Variational Problem Arising in Computer Vision,” Signal Processing, Part I: Signal Processing Theory, vol. 22, pp. 189-210, New York: Springer-Verlag, 1990.

Mitter, S.K., “Markov Random Fields, Stochastic Quantization and Image Analysis,” Applied and Industrial Mathematics, pp. 101-109, Kluwer Academic Publishers, 1991.

Conference Presentations

Zeitouni, Ofer and S.K. Mitter, “An SPDE Formulation for Image Segmentation,” Conference on Stochastic PDE's,” Trento, Italy, January 1990.

Kulkarni, S.R. and S.K. Mitter, “On Metric Entropy, Vapnik-Chervonenkis Dimension, and Learnability for a Class of Distributions,” 1990 AAAI Spring Symposium on the Theory and Application of Minimal-Length Encoding, March 1990.

Kulkarni, S.R. and S.K. Mitter, “Learning and Adaptation in Machine Vision,” American Control Conference, May 1990.

Invited Presentations

“Variational Problems with Free Discontinuities and Nonlinear Diffusions: Applications in Image Analysis,” Systems Research Center, University of Maryland, April 1990.

“Variational Problems with Free Discontinuities and Nonlinear Diffusions: Applications in Image Analysis,” Boston University, April 1990.

“Structure and Analysis of Complex Signals,” plenary address, 25th Anniversary Symposium, Center International des Sciences Mechaniques, Udine, Italy, May 1990.

“Variational Problems with Free Discontinuities and Nonlinear Diffusions,” 8th Army Conference on Applied Mathematics and Computing, Cornell University, June 1990 .

“Early Vision Problems and Nonlinear Diffusions,” invited keynote address, Workshop on Signal Processing, Communications and Networking, Indian Institute of Science, Bangalore, India, July 1990.

“Recursive Algorithms,” University of Minnesota, November 1990.

“Recursive Stochastic Algorithms for Global Optimization in R^d ,” Conference on Mathematical Theory of Control, Bombay, India, December 1990.

1991

Papers

Gelfand, S.B. and S.K. Mitter, “Recursive Stochastic Algorithms for Global Optimization in R^d ,” SIAM Journal on Control and Optimization, Vol. 29, No. 5, pp. 999-1018, September 1991.

Gelfand, S.B. and S.K. Mitter, “Simulated Annealing Type Algorithms for Multivariate Optimization,” *Algorithmica* (1991) 6:419-436.

Gelfand, S.B. and S.K. Mitter, “Weak Convergence of Markov Chain Sampling Methods and Annealing Algorithms to Diffusions,” *Journal of Optimization Theory and Applications*, Vol. 68, No. 3, pp. 483-498, March 1991.

Kulkarni, S.R., S.K. Mitter, J.N. Tsitsiklis and O. Zeitouni, “Some Connections Between PAC Learning and Stochastic Geometry,” *Proceedings, Workshop on Learning and Geometry*, January 1991.

Invited Presentations

“Variational Principles for Neural Weight Adjustment,” Center for Intelligent Control Systems Workshop on Analog, Neural and Asynchronous Computing, April 1991.

“Variational methods for Image Segmentation,” Institute for mathematics and its Applications, University of Minnesota, April 1991.

“Stochastic Recursive Algorithms for Global Optimization in R^d ” Rutgers Workshop on Applied Stochastic Analysis, May 1991.

1992

Books

Bensoussan, A., Da Prato, G., Delfour, M.C. and Mitter, S.K., *Representation and Control of Infinite Dimensional Systems*, Vol. I, Birkhauser-Boston, 1992.

Papers

Eide, E., Rohlickek, J.R., Gish, H. and Mitter, S.K., “A Linguistic Feature Representation of the Speech Waveform,” *IEEE, Proc. ICASSP-92*.

Casadei, S., S.K. Mitter and P. Perona, "Boundary Detection in Piecewise Homogeneous Textured Images," ECCV , May 19-22, 1992.

Invited Lectures

Estimation for Markov Random Fields: Lectures at NATO, ASI Institute on Acoustic Signal Processing, Madeira, Portugal, July 1992.

1993

Books

Bensoussan, A., Da Prato, G., Delfour, M.C. and Mitter, S.K., Representation and Control of Infinite Dimensional Systems, Vol. I, Birkhauser-Boston, 1992, Volume II, 1993.

Papers

Gelfand, S.B. and S.K. Mitter, "Metropolis-Type Annealing Algorithms for Global Optimization in R^d ," SIAM Journal on Control and Optimization, Vol. 31, No. 1, pp. 111-131, January 1993.

Gelfand, S.B. and S.K. Mitter, "On Sampling Methods and Annealing Algorithms," in Markov Random Fields: Theory and Applications, ed. R. Chellappa and A. Jain, New York: Academic Press, 1993.

Kulkarni, S.R., S.K. Mitter and J.N. Tsitsiklis "Active Learning Using Arbitrary Binary Valued Queries," accepted Machine Learning, 11, pp. 23-35, 1993.

Kulkarni, S.R., S.K. Mitter, J.N. Tsitsiklis and O. Zeitouni, "PAC Learning with Generalized Samples and an Application to Stochastic Geometry," IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol.15, No. 9, pp. 933-942, September 1993.

Mitter, Sanjoy K. "Modelling and Estimation for Random Fields." Acoustic Signal Processing for Ocean Exploration. Eds. J.M.F. Moura and I.M.G. Lourtie, pp. 391-412 (1993).

Mitter, S.K. and Schick, I.C., "Point Estimation, Stochastic Approximation, and Robust Kalman Filtering," in Systems, Models and Feedback: Theory and Applications, eds. A. Isidori and T.J. Tarn, Birkhauser, pp. 127-152.

Invited Lectures

Plenary Lecture: Perception, Cognition and Situated Action, American Control Conference, San Francisco, June 2-4, 1993.

1994

Papers

Branicky, M., Borkar, V.S., and Mitter, S.K., "Unified Framework for Hybrid Control", Decision & Control, 33 Conference, Vol. 4, pp. 4228-4234, 1994.

Kulkarni, S.R., S.K. Mitter, T. J. Richardson, and J. N. Tsitsiklis. "Local Versus Nonlocal Computation of Length of Digitized Curves." IEEE Transactions on Pattern Analysis and Machine Intelligence. Vol.16, No. 7, pp. 711-718, July 1994.

Mitter, S.K. "Duality of Linear Input-Output Maps." In Communications and Cryptography Two Sides of One Tapestry. Ed. R.E. Blahut, D.J. Costello, Jr., U. Maurer, T. Mittelholzer, pp.307-314. Boston-Dordrecht-London, Kluwer Academic Publishers, 1994.

Richardson, Thomas, and Sanjoy K. Mitter. "Approximation, Computation, and Distortion in the Variational Formulation." In Geometry-Driven Diffusion in Computer Vision. Ed. B.M. ter Haar Romeny, pp.169-190 (1994).

Schick, I.C., and S.K. Mitter, "Robust Recursive Estimation in the presence of Heavy-Tailed Observation Noise," Annals of Statistics, Vol. 22, No. 1, pp. 1045-1080, June 1994.

Invited Lectures

Plenary lecture in Statistics Section: Pattern Recognition and Learning. Indian Science Congress, Calcutta, India, January, 1994.

Duality of Linear Input-Output Maps. Conference in Honor of Professor James L. Massey's 60th birthday at Ascone, Switzerland, February 1994.

Impulse Control and Hybrid Systems. Conference in Honor of Professor George Zameis 60th birthday at McGill University, May 1994.

A Unified Framework for Hybrid Control. 11th International Conference on Analysis and Optimization of Systems, sponsored by INRIA, Sophia Antipolis, France, June 15-17, 1994.

Pattern Recognition and Learning. The Legacy of Norbert Wiener: A Centennial Symposium, M.I.T., October 8-14, 1994.

New problems and New directions in control. 1994 Hong Kong International Workshop on New Directions of Control and Manufacturing, Hong Kong, November 7-9, 1994.

Uncertainty, Feedback and Wiener's Vision of Cybernetics. Norbert Wiener Centenary Congress, Michigan State University, November 27-December 3, 1994.

1995

Papers

Casadei, S. and Mitter, S.K., "Robust Edge Linking in Linear Time by Bifurcation Analysis," October 1995.

Borkar, V.S., Chandru V. and Mitter, S.K., "A Linear Programming Model of First Order Logic," January 1995.

Zampieri, S. and Mitter, S.K., "Linear Systems Over Noetherian Rings in the Behavioural Approach," CICS-P-423, January 1995.

Invited Lectures

Nonlinear Filtering Revisited. Communications, Control, Signal Processing and Computation, an International Symposium at Stanford University on the occasion of Thomas Kailath's 60th Birthday, June, 1995.

The Limits of Universality in Problems of Inference. International Conference on Control and Information, Hong Kong, June 5-9, 1995.

On Uniqueness of solution to filtering equations. The Mathematical Heritage of Norbert Wiener, Indian Statistical Institute, New Delhi, India, December 28-29, 1995.

1996

Papers

Borkar, V.S., and Mitter, S.K., "Stochastic Processes that Generate Polygonal and Related Random Fields," IEEE Transactions on Information Theory, vol.42, No.2, March 1996.

Casadei, S. and Mitter, S.K., "A Hierarchical Approach to High Resolution Edge Contour Reconstruction," IEEE Conference of Computer Vision and Pattern Recognition, June 1996.

Mitter, S.K., "Filtering and Stochastic Control: A Historical Perspective," IEEE Control Systems, pp.67-76, June 1996.

Zampieri, S. and Mitter, S.K., "Linear Systems Over Noetherian Rings in the Behavioural Approach (Summary)," J. of Math. Systems, Estimation and Control, **6** (2), 235-238, March 1996.

Invited Lectures

The Embedding of Logic in Mathematical Programming (joint work with V.Borkar and V. Chandru). Hybrid Systems IV Conference, Ithaca, New York, October 12-14, 1996.

1997

Papers

Akra, Mohamad and Mitter, S.K., "Waveform Recognition in the Presence of Domain and Amplitude Noise," IEEE Transactions on Information Theory, vol. 43, No.1, January 1997.

Mitter, S.K., "Logic and Mathematical Programming," in Control Using Logic-Based Switching - Lecture Notes in Control and Information Sciences, Vol. 222. Berlin-Hiedelberg-New York: Springer-Verlag, 1997.

Mitter, S.K., "Inference, Learning, and Recognition", Proceeding of Symposia in Pure Mathematics", Volume 60, 1997.

Borkar, V.S. and Mitter, S.K., "LQG Control with Communication Constraints," in *Communications, Computation, Control and Signal Processing*, A. Paulraj, V. Roychowdhury, C.D. Schaper (eds.), in tribute to Thomas Kailath, Kluwer Academic Publishers, Boston, 1997.

Invited Lectures

Plenary Lecture: Hybrid Systems, Logic and Mathematical Programming. The Fifth IEEE Mediterranean Conference on Control and Systems, Paphos, Cyprus, July 21-23, 1997.

1998

Papers

Branicky, M., Borkar, V.S., and Mitter, S.K., "A Unified Framework for Hybrid Control: Model and Optimal Control Theory", IEEE Transaction on Automatic Control, Vol. 43, No. 1, pp. 31-45, January 1998.

Casadei, S. and Mitter, S.K., "Hierarchical Image Segmentation -- Part 1: Detection of Regular Curves in a Vector Graph", International Journal of Computer Vision, 27(3): 71-100, March 1998.

Mitter, S.K., "The Legacy of George Zames", IEEE Transactions on Automatic Control, Vol. 43, No. 5, May 1998.

Invited Lectures

Plenary Lecture: MTNS 98, Padova, Italy, July 1998, On the Interaction between Information and Control.

1998 Allerton Conference on Communication, Control and Computing, Real Time Information Theory, September 1998.

1999

Papers

Akra, M., Bazzi, L., and Mitter, S.K., "Sampling of Images for Efficient Model-Based Vision", IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 21, No. 1, January 1999.

Borkar, V.S., and Mitter, S.K., "A Strong Approximation Theorem for Stochastic Recursive Algorithms", Journal of Optimization Theory and Applications, Vol. 100, No. 3, pp. 499-513, March 1999.

Casadei, S. and Mitter, S.K., "An Efficient and Provably Correct Algorithm for the Multiscale Estimation on Image Contours by Means of Polygonal Lines", IEEE Transactions on Information Theory, Vol. 45, No. 3, April 1999.

Mitter, S.K. and A. Sahai, "Information and Control; Witsenhausen Revisited" in *Learning, Control, and Hybrid Systems: Festschrift in Honor of Bruce Allen Francis and Mathukumalli Vidyasagar on the Occasion of their 50th birthdays*, Y. Yamamoto and S. Hara (eds.), Lecture Notes in Control and Information Sciences, 241, pp. 281-293, Berlin and New York: Springer, 1999.

Casadei, S. and Mitter, S.K., "Beyond the Uniqueness Assumption: Ambiguity Representation and Redundancy Elimination in the Computation of a Covering Sample of Salient Contour Cycles," Special issues on perceptual organization in computer vision, *Computer Vision and Image Understanding*, October 1999.

Invited Lectures

IEEE Information Theory Workshop on Detection, Estimation, Classification, and Imaging, Santa Fe, New Mexico, February 1999, Real Time Information Theory.

2000

Papers

Mitter, S.K., “Control with Limited Information: the Role of Systems Theory and Information Theory”, ISIT 2000 Plenary Talk, IEEE Information Theory Society Newsletter, **50**, pgs.1-23, December 2000.

Mitter, S.K. and N. Newton, “The Duality Between Estimation and Control,” in *Optimal Control and Partial Differential Equations*, J.L. Menaldi, E. Rofman and A. Sulem (eds.), in honor of Professor Alain Bensoussan’s 60th anniversary, IOS Press, Amsterdam, 2000.

Invited Lectures

Workshop on Stochastic Analysis organized by CIRM, Trento, Italy. January 2000.

Plenary Lecture: Control with Communication Constraints: Systems Theory meets Information Theory, International Symposium on Information Theory, Sorrento, Italy, June 2000.

2001

Papers

Borkar, V.S., Mitter, S.K., and Tatikonda, S., “Markov Control Problems Under Communication Constraints”, *Comm. Inf. Sys.* Vol. 1, No. 1, pp. 15-32, January 2001.

Borkar, V.S., Mitter, S.K., and Tatikonda, S., “Optimal Sequential Vector Quantization of Markov Sources”, *SIAM J. Control Optim.* Vol. 40, No. 1, pp. 135-148, 2001.

Mitter, S.K., “Control with Limited Information”, *Eur. Jrn. Control*, Vol. 7, pp. 122-131, 2001.

Elia, N. and Mitter, S.K., “Stabilization of Linear Systems with Limited Information,” *IEEE Trans. Auto. Control*, Vol. 46, No. 9, pp. 1384-1400, September 2001.

Invited Lectures

Colloquium Speaker: Towards a Unified Theory of Communications and Control, Inst. für Automatik, ETH, Zürich, Switzerland, April 11, 2001.

Colloquium Speaker: Towards a Unified Theory of Communications and Control, Distinguished Lecturer Series, Electrical Engineering Dept., University of Maryland, College Park, Maryland, April 27, 2001.

Plenary Lecturer: Control with Limited Information, European Control Conference, Porto, Portugal, September 2001.

2002

Papers

Mitter, S.K., "On System Effectiveness," Proceedings of Symposium on System Effectiveness, San Marino, Italy, 2002.

Duci, A., A. Yezzi, S.K. Mitter and S. Soatto, "Region Matching with Missing Parts," in Proceedings of ECCV 2002, 7th European Conference on Computer Vision, Copenhagen, Denmark, May 28-31, 2002, Lecture Notes in Computer Science **2352**, pp. 48-64. (LIDS-P-2538)

Borkar, V.S., Chandru, V. and Mitter, S.K., "Mathematical Programming Embeddings of Logic," Journal of Automated Reasoning **29**: 91-106, 2002.

Borkar, V.S. and Mitter, S.K., "A Note on Stochastic Dissipativeness" in *Directions in Mathematical Systems Theory and Optimization*, eds. A. Rantzer and C.I. Byrnes, 41-49 (Springer-Verlag, 2002), in honor of Professor Anders Lindquist's 60th birthday.

Mitter, S.K. and Newton, N.J. "A Variational Approach to Nonlinear Estimation," SIAM Jrn. on Control, Volume 42, Number 5 (2004), pp. 1813-1833.

Invited Lectures

IBM Technological Summit on Autonomic Computing, May 2002.

Plenary Lectures

System Science: The Convergence of Communication, Computation and Control, IEEE Conference on Control Applications, Glasgow, Scotland, September 2002.

"On Quantum Estimation and Control," International Conference on Quantum Control: Mathematical and Numerical Challenges, Centre de recherches mathematiques, Universite de Montreal, Montreal (Quebec), Canada, Oct. 6-11, 2002.

Forthcoming Books

Gaveau, B., S.K. Mitter and C. Rockland, "Autonomy and Adaptiveness: A Perspective on Emergent Organisms," to be published by MIT Press.

Saligrama, V., M. Dahleh and S.K. Mitter, "Learning, Adaptation, and Decision Making with Finite Data," to be published by Princeton University Press.

2003

Papers

Book review: T. Kailath, A.H. Sayed and B. Hassibi, "Linear Estimation," IEEE Trans. on Auto. Control, Vol. 48, No. 1, January 2003.

L. Bazzi and S.K. Mitter, "Some Constructions of Codes from Group Actions," LIDS-P-2531, submitted to IEEE Transactions on Information Theory, March, 2003.

L. Bazzi and S.K. Mitter, "Encoding Complexity Versus Minimum Distance," LIDS-P-2597, to appear in IEEE Transactions on Information Theory, 2005.

L. Bazzi and S.K. Mitter, "The Solution of Linear Probabilistic Recurrence Relations," *Algorithmica* (2003) 36; 41-57.

S. Tatikonda, A. Sahai and S.K. Mitter, "Stochastic Linear Control Over a Communication Channel," IEEE Trans. on Auto Control, Special Issue on Networked Control Systems, Volume: 49 , Issue: 9 , Sept. 2004, Pages:1549 – 1561.

V.S. Borkar, V.R. Konda and S.K. Mitter, "On De Finetti Coherence and Kolmogorov Probability," LIDS # 2514, Stat. Prob. Lett. 66 (2004) 417-421.

2004

Papers

V.S. Borkar, S.K.Mitter and S.R.Venkatesh, "Variations on a theme by Neyman and Pearson," Sankhya, Volume 66, Part 2, pp. 292-305, May 2004.

S.K. Mitter and N.J. Newton, "Information and Entropy Flow in the Kalman-Bucy Filter," LIDS# P-2577, to appear in J. of Stat. Phys., January 2005.

Mitter, S.K., and Tatikonda, S., "Control over Noisy Channels," IEEE Trans. on Auto. Control, Volume: 49 , Issue: 7, July 2004, Pages:1196 – 1201.

Mitter, S.K., and Tatikonda, S., "Control Under Communication Constraints," IEEE Trans. on Auto. Control, Volume: 49 , Issue: 7 , July 2004, Pages:1056 – 1068.

2005

Papers

A. Sahai and S.K. Mitter, "The Necessity and Sufficiency of Anytime Capacity for Stabilization of a Linear System Over a Noisy Communication Link, Part I: Scalar Systems," LIDS #2649, submitted to IEEE Trans. On Info Theory, May 2005.