Shambhu N. Sharma, PhD

Associate Professor

Department of Electrical Engineering

National Institute of Technology

Surat, India, 395007

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DoB: 01:02:1972

Degrees

B.E. Electrical Engineering**,** Govt. Engineering College Rewa, M.P., India

M.Tech. Control Systems (Electrical Engineering)**,** Institute of Technology, Banaras Hindu University, UP, India

Ph.D. Volterra and stochastic systems theory**,** the University of Delhi, Delhi, India

Regular Job experience (permanent position)

(i) *NSIT Delhi (An Autonomous Institution of Govt. of NCT of Delhi)*

Lecturer (Instrumentation and Control Engineering Division)

July 26, 2000- December 31, 2005

(ii) *NSIT Delhi (An Autonomous Institution of Govt. of NCT of Delhi)*

Assistant Professor (Instrumentation and Control Engineering Division)

January 1, 2006- March 31, 2009

(iii) *NIT Surat* (*Sardar Vallabhbhai National Institute of Technology, Surat ,Gujarat)*

Associate Professor (Electrical Engineering Department)

April 1, 2009- till date

Area of Interest

(i) Estimation theory

(ii) Non-linear system theory

(iii) Dynamical systems

(iv) Stochastic control

(v) Stochastic differential equations

(vi) Linear algebra

(vii) Applications of stochastic filtering theory to satellite dynamics, networked control, switched electrical networks, Autonomous Underwater Vehicles (AUVs)

Courses Taught at Undergraduate Level at NSIT Delhi

(i) Control systems 1

(ii) Circuits and systems

(iii) Random signals

(iv) Principle of electrical engineering

(v) Electrical measurements

(vi) Robotics

(vii) Electrical engineering and Measurement lab

(viii) Control engineering lab

(ix) Electrical workshop

Courses Taught at Postgraduate Level at NSIT Delhi

(i) Random processes in estimation and control

(ii) Adaptive control systems

(iii) Robotics

(iv) Discrete-time control systems

(v) Estimation theory lab

Courses Taught at Undergraduate Level at NIT Surat, Gujarat, India

(i) Circuits and systems

(ii) State variable analysis, an *Institute-level elective*

(Run by Electrical Engineering Department, National Institute of Technology, Surat, India)

(iii) Discrete-time control systems

(iv) Non-linear control systems

(v) Control engineering lab

Courses Taught at Postgraduate Level at NIT Surat, Gujarat, India

(i) System theory fundamentals

Publications of Shambhu N. Sharma

Journal publications

(1) **S. N. Sharma**, H. Parthasarathy and J.R.P. Gupta

Third-order approximate Kushner filter for a non-linear dynamical system, *International Journal of Control*, 79(9), pp. 1096-1106, 2006. (doi: 10.1080/00207170600800124).

(2) **Shambhu N. Sharma** and H. Parthasarathy

Dynamics of a stochastically perturbed two-body problem. *Pro. R. Soc. A,* The Royal Society: London, 463, pp.979-1003, 2007. (doi: 10.1080/rspa.2006.1801).

http://www.journals.royalsoc.ac.uk/(wjaizyfakgeqz0mjruuqw0jt)/app/home/contribution.asp?referrer=parent&backto=issue,2,9;journal,1,137;linkingpublicationresults,1:102023,1

(3) **Shambhu N. Sharma**, and H. Parthasarathy

A two-body continuous-discrete filter, *Non-linear Dynamics* (An international Journal for dynamics and control), Springer: the Netherlands, 51(nos. 1-2), 155-170, 2008 (doi: 10.1007/s11071-007-9199-0).

http://www.springerlink.com/content/174pww5131633735/

(4) **Shambhu N. Sharma**, and H. Parthasarathy

Volterra series arising from the discrete Schrodinger wave equation in Hilbert space, *Applied Mathematics and Computation* (an Elsevier Journal), 196, pp. 563-569, 2008. (doi: 10.1016/j.amc.2007.06.030)

http://dx.doi.org/10.1016/j.amc.2007.06.030

(5) **Shambhu N. Sharma**

Non-linear filtering for a dust-perturbed two-body model, *Non-linear Dynamics* (An international Journal for dynamics and control), Springer: the Netherlands, 55, pp.221-238, 2008 (doi: 10.1007/s11071-008-9358-y).

http://www.vtex.lt/pws/index.php/index/index

(6) **Shambhu N. Sharma**

A Kolmogorov-Fokker-Planck approach for a stochastic Duffing-van der Pol system, *Differential Equations and Dynamical Systems*: Mathematics and Statistics (An International Journal for Theory, Applications, Computer Simulations), 16(4), pp. 351-377, October, 2008. DOI: 10.1007/s12591-008-0019-x.

http://www.springerlink.com/content/t5315t2k62154151/

(7) **Shambhu N. Sharma**

A Kushner approach for small random perturbations of a stochastic Duffing-van der Pol system, *Automatica* (a Journal of IFAC, International Federation of Automatic Control), 45, pp. 1097-1099, 2009.

http://dx.doi.org/10.1016/j.automatica.2008.12.010

(8) **Shambhu N Sharma**

A connection between multi-linear and Volterra systems, *Applied Mathematics and Computation* (an Elsevier Journal), 216 (7), 1918-1922, 2010. **http://dx.doi.org/10.1016/j.amc.2010.01.120**.

(9) Hiren G Patel and **Shambhu N. Sharma**

Some evolution equations for an Ornstein-Uhlenbeck process-driven dynamical system, *Fluctuation and Noise Letters* (An SCIE Journal on 'Random Processes in Physical, Biological and Technological Systems'), 11(4), 1250020-39, 2012. http://www.worldscientific.com/doi/abs/10.1142/S0219477512500204.

(10) Hiren G Patel and **Shambhu N. Sharma**

Filtering for a Duffing-van der Pol stochastic differential equation, *Applied Mathematics and Computation* (an SCI Journal), Accepted for publications.

(11) Hiren G Patel and **Shambhu N. Sharma**

Third-order continuous-discrete filtering for a non-linear dynamical system, *The ASME(The American Society of Mechanical Engineers) Transactions*, Journal of Computational and Non-linear Dynamics, Accepted for publications.

Selected Refereed Conference and Symposium Papers

(1) Nanasaheb S Patil and **Shambhu N Sharma**, On the theory of a time-varying bilinear Stratonovich stochastic differential system and its application to a dynamic circuit, *the 45th ISCIE (Institute of Transactions of Systems, Control and Information Engineers) International Symposium on Stochastic Systems Theory and its Applications*, University of the Ryukyush, Okinawa, Japan, November 1-2, 2013.

(2) Balaji G Gawalwad and **Shambhu N Sharma**, On a perturbed phase-locked loop system: a simple physical model, the *2013 Multi-Conference on Systems and Control* : IEEE Control Systems Society Conference, , Hyderabad, India, August 28, 2013.

(3) Ravish H Hirpara and **Shambhu N Sharma,** On a phase tracking problem: non-linear filtering approaches, *3rd International Conference on Systems and Control:* an IEEE Control Systems Society Conference, Algiers, Algeria, October 29-31, 2013, accepted.

(4) Sandhya Rathore and **Shambhu N Sharma** A non-linear switched system, the Lagrangian method and Itô theory, *The SICE (The Japanese Society of Instrumentation and Control Engineers) Annual Conference 2013,* Nagoya University, Nagoya, Japan, September 14-17, 2013.

(5) Sandhya Rathore and **Shambhu N Sharma** A Fokker-Planck model for a non-linear switched system, *3rd International Conference on Systems and Control*, an IEEE Control Systems Society Conference, Algiers, Algeria, October 29-31, 2013.

(6) Nanasaheb S Patil and **Shambhu N Sharma**, A note on a sampling mixer under the coloured noise influence, *the 2012 Multi-Conference on Systems and Control (MSC),* an IEEE Control Systems Society Conference, Dubrovnik Palace Hotel, Dubrovnik, Croatia, October 3, 2012.

(7) Balaji G Gawalwad and **Shambhu N Sharma**, Noise analysis of a CMOS inverter using Itô stochastic Differential Equation, *the 2012 Multi-Conference on Systems and Control (MSC),* an IEEE Control Systems Society Conference, Dubrovnik Palace Hotel, Dubrovnik, Croatia, October 3, 2012.

Others highlights

(1) The following paper published in the *Royal Society of London* considered for the *International press release*, chosen by the NASA/Smithsonian Astrophysical Observatory as its collection of papers as well as cited in prestigious Journals:

(i) Shambhu N. Sharma and H. Parthasarathy

Dynamics of a stochastically perturbed two-body problem. *Pro. R. Soc. A,* The Royal Society: London, 463, pp.979-1003, 2007. (doi: 10.1080/rspa.2006.1801).

(2) A review of the paper, *International Journal of Control*, 79(9), pp. 1096-1106, 2006, added to the database of the Math Reviews, MR 224 2909(2007f: 93113) 93 E 11(60H 10) of *American Mathematical Society*.

Journals, selected Conferences and Symposiums contributed

(1) *Proceedings of the Royal Society* A: Mathematical, Physical and Engineering Sciences, i.e. A Journal of the Royal Society, UK's National Academy of Sciences.

(2) *The ASME Transactions*, Journal of Computational and Non-linear Dynamics

(3) *Automatica*, an IFAC (International Federation of Automatic Control) Journal

(4) *International Journal of Control*, a Taylor and Francis Journal

(5) *Differential Equations and Dynamical Systems*, A mathematics and statistics Journal

(6) *Non-linear Dynamics*, An International Journal of Dynamics and Control

(7) *Applied Mathematics and Computations*, a mathematics Journal

(8) *Fluctuation and Noise Letters*, An Interdisciplinary Scientific Journal on Random Processes in Physical, Biological and Technological Systems

(9) Nova Science Publishers, USA

(10) *The 2012 Multi-Conference on Systems and Control (MSC)*, An IEEE Control Systems Society Conference

(11) *The 2013 Multi-Conference on Systems and Control (MSC)*, An IEEE Control Systems Society Conference

(12) *3rd International Conference on Systems and Control*, An IEEE Control Systems Society Conference

(13) *The SICE (The Japanese Society of Instrumentation and Control Engineers) Annual Conference 2013*, Nagoya University, Nagoya, Japan.

(14) The 45th ISCIE (the Institute of Systems, Control and Information Engineers) International Symposium on Stochastic Systems Theory and its Applications, *University of the Ryukyush, Okinawa, Japan*, November 2, 2013.

Membership, International Activities and Others

(1) Offered the position of a *Visiting Fellow* in the School of Technology and Computer Science (STCS, TIFR Mumbai, India) , Feb 4, 2009.

(2) The session *Chair*, 2013 MSC (*Multi-Conference on Systems and Control*), An IEEE Control Systems Society event, Hyderabad, India, August 28, 2013.

(3) The session *Chair*, the 2013 SICE *(Japanese Society of Instrument and Control Engineers*), Nagoya University, Japan, September 15, 2013.

(4) Reviewer, *International Journal of Control*, UK.

(5) Reviewer, *Non-linear Dynamics* (An international Journal for dynamics and control), Springer: the Netherlands

(6) Reviewer, *Proceedings of the National Academy of Sciences* (PNAS), United States of America.

(7) Reviewer, *the 2013 American Control Conference (ACC)*, June 17-19, Washington, DC, United States of America.

(8) Reviewer, *the 2012 American Control Conference (ACC)*, Montreal, Canada

(9) Reviewer, *the 16th IFAC (International Federation of Automatic Control) Symposium on System Identification*, Brussels, Belgium, 2012.

(10) Reviewer for the track 4, Dynamics, Control and Uncertainty, of *the 2012 ASME International Mechanical Engineering Congress and Exposition* (IMECE 2012), Houstan, Texas, United States of America

(11) Reviewer, *International Journal of Mechatronics and Automation*, Inderscience Publishers (www.inderscience.com).

(12) Reviewer, *IETE Journa*l, India

(13) Reviewer, *International Journal of Biomechatronics and Bio Robotics*

(14) Received numerous invitations for organizing and chairing special sessions for other international conferences as well.

(15) Invited to interact with Editors of *Control Engineering Journals*, an IFAC conference, Milan, August 31, 2011.

Contributions to Academic Administrations

(1) *Associate Dean, Academic,* National Institute of Technology, Surat, India, from April 2012 till date

(2) Coordinated the NBA (National Board of Accreditation) activities for the UG and PG program proposals, 2012-May 2013.

(3) Founder Centre in-Charge, SV National Institute of Technology Centre, for the CCMT 2012, the Centralized Counseling for MTech and M Plan Programmes of the NITs, June 2012.

(4) *Chairman*, PG Admissions, National Institute of Technolgy, Surat, India, February 2012 till August 5, 2012

(5) The Co-ordinator, B Tech first year and MSC first year, five-year integrated program, SV National Institute of Technology, July 2012 till date

(6) *Member Secretary*, the Institute School Committee, National Institute of Technology, Surat, India, February 2012 till date

(7) *Chairman*, Centre for Human Resource Development (CHRD), NIT Surat, India, June 2009 till May 2010.

(8) *Member*, the Electrical Engineering Department representative, the Institute Library committee, NIT Surat, June 10, 2011 till date.

(9) *Lab-in-charge*, Control lab, Department of Electrical Engineering, National Institute of Technology, Surat, India.

(10) *Member*, Departmental Research Committee, Electrical Engineering Department, NIT Surat, India, July 2009 till date

Department-Institute level assignments at NSIT Delhi

(1) Lab-in-charge of Principle of Electrical Engineering Lab (NSIT Delhi) till Dec. 2006.

(2) Lab-in-charge of Control Engineering Lab (NSIT Delhi) till March 2009.

(3) Co-ordinator, practical examination, NSIT Delhi, for one year.

(4) Member, postgraduate committee of the ICE Division (NSIT Delhi) till March 2009.

(5) Member, selection committee for the M. Tech. Admission in Computer Engineering Division (NSIT Delhi), 2002.

(6) Member, selection committee for the M. Tech. Admission in Electronics and Communication Engineering Division (NSIT Delhi), 2003.

(7) Member, selection committee for the M. Tech. Admission in Electronics and Communication Engineering Division (NSIT Delhi), 2006.

University of Delhi and Government of Delhi assignments

(1) Member, Departmental Research Council (DRC), Instrumentation and Control Engineering, *University of Delhi*, Delhi, India till March 2009.

(2) Member, courses' committee of Instrumentation and Control Engineering Division, the Faculty of Technology (FoT), the *University of Delhi*, Delhi till March 2009.

(3) A Faculty representative of Deptt. of Training and Technical Education (DTTE), the *Govt of Delhi*, India, for the Electronic meter testing drives (October 2005).