Dr. Paresh DATE

EMPLOYMENT HISTORY

- **Positions in Academia**

  ⇒ *July 2002* - : **Lecturer**, Department of Mathematical Sciences, Brunel University, UK.

  ⇒ *Mar 2000 - June 2002*: **Research Associate**, Cambridge University Engineering Department.

- **Positions in Industry**

  ⇒ *1995-96*: **Engineering Executive**, Control and Automation Division, Larsen & Toubro Limited, Mumbai, India.

  ⇒ *1995*: **Associate Consultant**, Citicorp Overseas Software Limited, Mumbai, India.

EXPERIENCE

Research

Main research interests

- Identification and validation of dynamic systems.
- Quantification of uncertainty in modelling problems.
- Applications of systems theory in non-traditional domains such as finance and water networks.

Research Student Supervision

Principal supervisor for three research students since October 2003:

1. Mr. B. Gashi: Modelling and control of controlled stochastic differential equations.
2. Mr. R. Hawkes: Dynamic models of stockmarket volatility and their applications in portfolio optimization (studentship partly funded by U.K. research council and partly by Unicom Systems Limited, U.K.).
3. Mr. S. Winter: Measurement and optimization of risk measures.

A fourth PhD student (Mr. Jianjun Zhang) will be joining me in October 2004. He will be working on applications of dynamical systems theory in quantitative finance.

Teaching

1. **Systems Engineering**: At Cambridge University Engineering Department (1998-2002), I carried out various tutorial and laboratory demonstration duties:
   - Linear Systems and Control: a second year engineering course including study of Laplace transforms, stability criteria, sampling and Z-transforms.
   - Control Systems and Signal Processing: a third year engineering course including study of linear algebra, state space systems and random processes.
   - Laboratory demonstrator and marker for a third year experiment *pendulum controller*.
2. **Computing**: Module leader for a pair of continuous assessment-based second year undergraduate modules, *Applied Computing Projects* (5-8 students) and *Financial Computing Projects* (40-50 students) in 2003-04.
3. **Undergraduate Projects**: Supervisor for three third year undergraduate projects in 2003-04; two related to topics in modelling of financial systems and one on system identification. Third year project forms a third of the total annual credit points.
4. **Postgraduate Projects**: In 2004, I am supervising an MSc project on dynamic modelling of stockmarket volatility.

5. **Numerical Solution of ODEs**: I taught a second year undergraudate course (24 lectures) on the above topic in 2002-03 (35-40 students) and in 2003-04 (65-70 students).

Professional Development

1. Since October 2003, I am studying an evening course at Brunel (2 hours per week) leading to Postgraduate Certificate in Higher Education.

2. In September 2002, I attended a two day induction course for new lecturers in mathematics, organised by Learning and Teaching Support Network, U.K.

Professional Responsibilities

- **Academic Responsibilites**

  ⇒ Main co-ordinator of second year BSc (financial computing) course.

  ⇒ Module leader for two different modules (total 40 credits of 120 credits in the second year BSc).

- **Other Professional Responsibilities**

  ⇒ *2000-*: Since 2000, I have reviewed several research papers for peer reviewed journals including SIAM journal of Control and Optimization, Automatica and IEEE Transactions on Automatic Control.

  ⇒ *2000-02*: At Cambridge, I maintained control group homepage and was one of the administrators for Control Engineering virtual library.

  ⇒ *1995-96*: In Larsen and Toubro Limited, Mumbai, India, my responsibilities included design and documentation of PLC discrete Input/Output modules. I led a team of three for design of an output module in Dec.1995-Jan.1996. In 1996, I designed a PID autotuner and integrated it into a Real Time OS for a DC drive. I was also involved in a documentation review for ISO 9001 audit.

  ⇒ *1995*: In Citicorp Overseas Software Limited, Mumbai, India, my work involved maintenance of a banking software product used by Citicorp.

PUBLICATIONS

Peer-reviewed journal publications

1. P. Date and A. Lanzon, "A Combined Iterative Scheme for Identification and Control Redesigns", accepted for publication in *International Journal of Adaptive Control and Signal Processing*, corrected proofs submitted in August 2004.

2. P. Date and G. Vinnicombe, "New Untuned Algorithms for Control Oriented Identification", *Automatica*, vol. 40, pp. 995-1002, 2004.

3. P. Date and G. Vinnicombe, "Measuring Distance between Systems under Bounded Power Excitation", accepted for publication in *SIAM journal of Control and Optimization*, corrected proofs submitted in June 2004.

4. P. Nataraj, P. Date and A. Umrani, "Robust Feedback Synthesis for Nonlinear Integrodifferential Equations using Generalized Describing Functions", *Automatica*, vol. 33, pp. 959-962, 1997.

Publications under review

1. P. Date and M. Cantoni, "A Lower Bound on Closed-Loop Performance based on a Finite Number of Frequency Response Samples of the Plant", provisionally accepted for publication (subject to minor revision), *Systems and Control Letters*, August 2004.

2. P. Date, "Approximate Solution of a System of Linear Equations with Random Perturbations", submitted to *Automatica*, July 2004.

3. P. Date and M. Cantoni, "Validation of Closed-Loop Behaviour from Noisy Frequency Response Measurements", submitted to *Systems and Control Letters*, Sept. 2003.

Peer-reviewed conference publications

1. P. Date, "Approximate Solution of a System of Linear Equations with Random Perturbations", to be published in Proceedings of Control 2004, Bath, U.K., Sept. 2004.

2. P. Date and M. Cantoni, "Validation of Closed-Loop Behaviour from Noisy Frequency Response Measurements", Proceedings of European Control Conference, Cambridge, UK, Sept. 2003.

3. P. Date and M. Cantoni, "A Lower Bound on Achieved Closed-Loop Performance based on Finite Data", Proceedings of European Control Conference, Cambridge, UK, Sept. 2003.

4. X. Bombois and P. Date, "Connecting PE Identification and Robust Control Theory: The Multiple-Input Single-Output Case. Part I: Uncertainty Region Validation", Proceedings of 13th IFAC Symposium on System Identification, Rotterdam, The Netherlands, Aug. 2003.

5. X. Bombois and P. Date, "Connecting PE Identification and Robust Control Theory: The Multiple-Input Single-Output Case. Part II: Controller Validation", Proceedings of 13th IFAC Symposium on System Identification, Rotterdam, The Netherlands, Aug. 2003.

6. P. Date and A. Lanzon, "An Algorithm for Joint Identification and Control", Proceedings of American Control Conference, Anchorage, USA, May 2002.

7. P. Date and G. Vinnicombe, "Measuring Distance between Systems under Bounded Power Excitation", Proceedings of American Control Conference, Arlington, USA, June 2001.

8. P. Date and G. Vinnicombe, "An Algorithm for Identification in the $\nu-$gap metric", Proceedings of the 38th Conference on Decision and Control, Phoenix, USA, Dec. 1999.

9. P. Date and G. Vinnicombe, "Worst Case Identification using FIR Models", Proceedings of European Control Conference, Karlsruhe, Germany, Aug. 1999.

10. P. Date and G. Vinnicombe, "New Untuned Algorithms for Identification in $\mathcal{H}_\infty$", Proceedings of the 37th Conference on Decision and Control, Tampa, USA, Dec. 1998.

SEMINARS (other than 10 conference paper presentations)

1. *On Distance between Systems under Persistent Excitation*, Department of Electrical and Electronic Engineering, University of Melbourne and Research School of Information Sciences and Engineering, Australian National University, Canberra, Australia, Aug. 2002.

2. *An Algorithm for Joint Identification and Control*, Signals, Systems and Control Group, TU Delft, Netherlands, Jan. 2002.

3. *Weight Selection and Identification in $\mathcal{H}_\infty$ Loop-shaping*, Workshop on Advanced Robustness Analysis Tools, University of Leicester, U.K., July 2001.

4. *Identification for Control: A $\nu-$gap metric Approach*, Department of Information Engineering, University of Siena, Italy, April 2001.

5. *Measuring Distance Between Systems under Bounded Power Excitation*, ERN System Identification workshop, Linköping, Sweden, Sept. 2000.

6. *Worst Case Identification*, Department of Electrical Engineering, Indian Institute of Technology, Mumbai, India, Jan. 2000.

7. *Worst Case Identification and the $\nu-$gap metric*, Division of Automatic Control, University of Linköping, Sweden, June 1999.

8. *New Untuned Algorithms for Worst Case Identification*, Cambridge University Engineering Department, U.K., Feb. 1999.

EDUCATION

- *PhD*, Control Group, Cambridge University Engineering Department, 1996-2000.
  Dissertation: Identification for Control: Deterministic Algorithms and Error Bounds.

- *Diploma in Software Technology*, National Center for Software Technology, India, 1996.
  Main Courses : Computer Organization and Operating Systems, Data Structure

and Algorithms using C.
Ranking: within top five out of 369 candidates throughout the country.

- *Master of Technology (M.Tech.)*, Department of Electrical Engineering, Indian Institute of Technology, Mumbai, India, 1993-1995.
  Main Courses : Digital Signal Processing, Statistical Signal Analysis, Optimal and Robust Control, Modern Electronic Measurement Practice.
  Project : A New Approach to Design of Robust Controllers for Nonlinear Processes.
  Score : 8.7/10 (course-work), 9.7/10 (project).

- *Bachelor of Engineering (B.E.), Electronics and Telecommunication*, University of Pune, India, 1989-1993.
  Main Courses : Electronic design, Heat Power Engineering, Power Electronics, Digital Electronics, Basic Electrical Engineering.
  Project : Development of 8051 based general purpose motherboard and I/O cards.
  Ranking : Third in the order of merit out of approximately 250 students.

AWARDS AND SCHOLARSHIPS

- Cambridge Commonwealth Scholarship, 1996-1999.

- Overseas Research Student Award, Council of Vice-Chancellors and Principals (CVCP), UK, 1996-1999.

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