

*Work Address*  
Project MISTRAL, INRIA,  
2004, Route des Lucioles,  
B.P.93, Sophia Antipolis Cedex,  
06902, FRANCE.  
Phone: +33-4-9238-7846  
Fax : +33-4-9238-7971  
Email:  
Parijat.Dube@sophia.inria.fr

*Home Address*  
Le Vincennes, 301, BIS  
Promenade des Anglais, Nice  
06200, FRANCE

*Citizenship* Indian

*Education* **INRIA (Institut National de Recherche en Informatique et en Automatique)**  
*Sophia Antipolis, FRANCE*  
2000-2002 *Doctorat en Informatique (Ph.D. in Computer Engineering)*

Title: Analysis of Transmission Control and Buffer Management Techniques  
for Communication Networks

Advisor: Prof. Eitan Altman, Prof. Philippe Nain

**Indian Institute of Science (IISc.)** *Bangalore, INDIA*  
1997-1999 *Master of Science in Electrical and Communications Engineering*

Thesis Title: Measurement Based Optimal Source Shaping and Connection Admission  
Control in Integrated Services Packet Networks

Advisor: Prof. Anurag Kumar

**Regional Engineering College (REC)** *Bhopal, INDIA*  
1993-1997 *Bachelor of Engineering in Electronics and Communications Engineering*

*Research Interests* Performance evaluation of stochastic networks in general and communications in particular,  
Network pricing, Resource allocation, Inventory control etc.

## Submissions

Policy,” submitted to *Queueing Systems*, 2001.

2. Eitan Altman, Kostia Avratchenkov, Chadi Barakat, Parijat Dube, “TCP over a Multistate Markovian Path,” submitted to *Telecommunication Systems (under revision)*, 2000.

3. Parijat Dube, Eitan Altman, “On the Workload Process in a Fluid Queue with Bursty Input and Selective Discarding,” submitted to *Probability in the Engineering and Informational Sciences*, 2002.

4. Parijat Dube, Omar Ait-Hellal, Eitan Altman, “On Loss Probabilities in the Presence of Redundant Packets with Random Drop,” invited for possible publication in *Performance Evaluation*, 2002.

## Conference Proceedings

1. Parijat Dube, Eitan Altman, “Utility Analysis of Simple FEC Schemes for Voice over IP”. In the *Proceedings of IFIP Networking 2002*, May 2002, Pisa, Italy.

2. Parijat Dube, Omar Ait-Hellal, Eitan Altman, “On Loss Probabilities in Presence of Redundant Packets with Random Drop”. In the *Proceedings of IFIP Networking 2002*, May 2002, Pisa, Italy. The paper got the BEST STUDENT PAPER award.

3. Parijat Dube, Eitan Altman, “Queueing Analysis of Early Message Discarding Policy”. In the *Proceedings of IEEE ICC 2002*, April 2002, New York City, USA.

4. Parijat Dube, Eitan Altman, “Fluid Analysis of Early Message Discard Policy Under Heavy Traffic”. To appear in the *Proceedings of INFOCOM 2002*, June 2002, New York City, USA.

5. Parijat Dube, Vivek Borkar, D. Manjunath, “Differential Join Prices for Parallel Queues: Social Optimality, Dynamic Pricing Algorithm and Applications to Internet Pricing”. To appear in the *Proceedings of INFOCOM 2002*, June 2002, New York City, USA.

6. Parijat Dube, Eitan Altman, “On the Workload Process in a Fluid Queue with Bursty Input and Selective Discarding”. In the *Proceedings of 17th International Teletraffic Congress (ITC-17)*, Dec 2001, Salvador de Bahia, Brazil.

7. Parijat Dube, Eitan Altman, “Queueing and Fluid Analysis of Partial Message Discard Policy”. In the *Proceedings of 9th IFIP Working Conference on Performance Modelling and Evaluation of ATM and IP Networks (IFIP ATM & IP 2001)*, June 2001, Budapest, Hungary.

8. Parijat Dube, Eitan Altman, “On Fluid Analysis of Queues with Selective Message Discarding Policies”. In the *Proceedings of 38th Annual Allerton Conference on Communication, Control and Computing*, October 2000, Monticello, Illinois, USA.

9. Eitan Altman, Kostya Avrachenkov, Chadi Barakat, Parijat Dube, “TCP over a multi-state Markovian Path”. In the *Proceedings of the International Conference on Performance and QoS of Next Generation Networks, P & Q Net 2000*, November 2000, Nagoya, Japan.

10. Natwar Modani, Parijat Dube, Anurag Kumar, “Measurement Based Optimal Source Shaping with a Shaping+Multiplexing Delay Constraint”. In the *Proceedings of INFOCOM 2000*, March 2000, Tel-aviv, Israel.

sentation in the session on “Fluid Approximations and Applications,” at the 11th INFORMS Applied Probability Society Conference, July 2001, New York City, USA.

2. Parijat Dube, Eitan Altman, “Queueing and Fluid Analysis of Selective Message Discarding Policy,” in *Septieme Atelier d’Evaluation de Performances* May 2001, Ecole Normale Supérieure (ENS), Paris, France.

*Working  
Papers*

1. Parijat Dube, Ravi Mazumdar, “A Framework for Quickest Detection of Traffic Anomalies in Networks,”.

2. Urtzi Ayesta, Kostya Avratchenkov, Chadi Barakat, Eitan Altman, Parijat Dube, “ Modeling Short TCP Transfers,”.

3. Alain Jean-Marie, Parijat Dube, Damien Artiges. Eitan Altman, “Decreasing Loss Probabilities by Redundancy and Interleaving: An Analytical Study,” .

4. Parijat Dube, Eitan Altman, “Performance Analysis of Delay Aware Simple FEC Schemes for Voice over IP,”.

5. Parijat Dube, Ger Koole, Philippe Nain, “On Queues with Correlated Interarrival Times”.

6. Parijat Dube, Eitan Altman, Tamer Basar, R. Srikant, “Optimal Admission Control in Wireless Networks”.

7. Parijat Dube, Eitan Altman, Philippe Nain, “Analysis of a Class of AQM Algorithms: A Singular Perturbation Viewpoint”.

8. Parijat Dube, Vivek Borkar, “Optimal Capacity Partitioning and Pricing in a System of Parallel Queues,”.

9. Vivek Borkar, Parijat Dube, Sandeep Juneja, “Dynamic Inventory Control and Pricing with Generalized Demand Distributions,”.

10. Parijat Dube, Eitan Altman, “A single Server Fluid Queue with Generalized Bursty Input and Selective Burst Discarding”.

## Experience

- ogy and Computer Science (TIFR), Mumbai, India. Worked on dynamic inventory Control and pricing.
2. 2002-2003: member of the *French Work force on TCP (ARC TCP)*: a joint committee of distinguished researchers from France and Switzerland (includes French institutes like INRIA, France Telecom R & D, IRISA, ENS and EPFL, Lausanne, Switzerland) working on modeling and analysis of TCP/IP networks.
3. 2002-2003: member of *French-British Scientific Cooperation "Alliance"* in area of optimal control and MDPs and their applications to communication networks.
4. Dec 2001- : cooperation with Prof. Alain Jean-Marie, *Laboratoire d'Informatique, de Robotique et de Microelectronique de Montpellier (LIRMM), Universite de Sciences et Techniques du Languedoc (Montpellier II), Montpellier, France*. Working on issues related to error correction techniques for reliable transmission over communication networks.
5. 2001-2002: participation in a *Van-Gogh project of French-Dutch scientific cooperation*. Visited Prof. Ger Koole, *Dept. of Mathematics and Computer Science, Vrije University, Amsterdam, The Netherlands* from 23rd Nov. 2001-1st Dec. 2001. Working on problems related to analysis and control of queues.
6. 26th Feb. 2001-10th April 2001: summer intern at *Tata Institute of Fundamental Research (TIFR), Mumbai, India*. Worked with Prof. Vivek Borkar, School of Technology and Computer Science and Prof. D. Manjunath, Department of Electrical Engg., Indian Institute of Technology (IIT), Bombay, India on network control and pricing.
7. Feb 2001-Dec 2001: participation in *ALCATEL Space Industries sponsored project* with Project Mistral, INRIA on modeling and analysis of Internet traffic.
8. 15th Oct. 2000-15th Dec. 2000: visiting student at *Purdue University, West Lafayette, Indiana, USA*. Worked with Prof. Ravi Mazumdar, School of Electrical and Computer Engg. on network security and anomaly detection.
9. 27th Sept. 2000 - 15th Oct. 2000: visited Prof. Tamer Basar *Decision and Control Laboratory, University of Illinois at Urbana-Champaign (UIUC), Illinois, USA*. Worked on optimal admission control in wireless networks.
10. Jan 1998-Dec 1999: research assistant in *NORTEL sponsored project* on "Measurement Based Connection Admission Control in Packet Networks" with Prof. Anurag Kumar, Dept. of Electrical Communication Engg., IISc., Bangalore, India.

ticelio, Illinois, USA.; Septieme Atelier d'Evaluation de Performances, June 2001, Ecole Normale Supérieure, Paris, France.; IFIP IP & ATM, June 2001, Budapest, Hungary.; 11th INFORMS Applied Probability Society Conference, July 2001, New York City, USA; Networking 2002, May 2000, Pisa, Italy.

2. *Universities/Research Institutes*: Indian Institute of Science (IISc.), Bangalore, India; Tata Institute of Fundamental Research (TIFR), Mumbai, India; Indian Institute of Technology (IIT), Bombay, India; INRIA, Sophia Antipolis, France; Vrije University, Amsterdam, The Netherlands.

*Services*

1. Reviewer for ACM Sigmetrics '01, '02, IEEE INFOCOM '02, IEEE ICC '02.
2. IEEE Student Member
3. Student representative in the scholarship committee at INRIA, France 2001-2002.

*Computer Skills*

Familiarity with C programming. Packages used include Matlab, Maple, NS simulator.

*Awards*

1. Selected to participate in *GI/Dagstuhl Research Seminar on Validation of Stochastic Processes*. Will work on a research problem with Prof. Holger Hermanns in the area “*Non-determinism in Stochastic Modelling*”.
2. Travel grant from IEEE Communications Society for Infocom 2002, New York City, USA.
3. Best student paper award at IFIP Networking 2002, May 19-24, Pisa, Italy in the track on Performance of Computer and Communication Networks.
4. Research grant from “Atelier d'Evaluation de Performances” (a french performance evaluation committee), 2001.
5. Research scholarship from French embassy in India and INRIA from Jan 2000-Dec 2003.
6. NORTEL research assistantship from Feb. 1998-Nov. 1999 at Indian Institute of Science (IISc.), Bangalore, India.
7. Merit scholarship during undergraduate studies 1994-97.

(Before  
1997)

Dept. of Atomic Energy, Govt. of India. The essay was titled *Radiation Technology and Applications of Radioisotopes* and was presented at Bhabha Atomic Research Centre (BARC), India, 1993.

2. Technical presentations at national level technical symposiums during undergraduate studies: (i) *Expert Systems: Methodology, Systems, Application*, 1995, Bhopal, India; the paper got *Best Paper Award* (ii) *Neural Networks: Deduction from Partial Information*, 1996, Bhopal, India. (iii) *Microprocessor Implementation of Digital Filters*, 1996, Surat, India.

3. Finalists in National Talent Search Examination 1991, National Science Quiz 1992, National Level Maths Olympiad 1992.

4. Member of various committees on extra-curricular activities during undergraduate studies 1993-1997; National Cadet Corps (NCC), 1989-90; National Service Scheme (NSS) 1994-96.

5. Independent research report on *Education for Enhancement and Empowerment of Women*, 1994-95. The project deals with understanding the level of education in Indian women and analysing the problems associated with illiteracy and measures to improve the situation.

#### References

1. *Prof. Eitan Altman*, Director of Research, Project MISTRAL, INRIA, Sophia Antipolis, France. Email: Eitan.Altman@sophia.inria.fr
2. *Prof. Vivek Borkar*, School of Technology and Computer Science, Tata Institute of Fundamental Research (TIFR), Mumbai, India. Email: borkar@tifr.res.in
3. *Prof. Anurag Kumar*, Associate Chairman, Dept. of Electrical Communication Engg, Indian Institute of Science (IISc.), Bangalore, India. Email: anurag@ece.iisc.ernet.in
4. *Prof. Ravi Mazumdar*, School of Electrical and Computer Engg., Purdue University, West Lafayette, Indiana, USA. Email: mazum@ecn.purdue.edu
5. *Prof. Philippe Nain*, Director of Research and Chief of Project, Project MISTRAL, INRIA, Sophia Antipolis, France. Email: Philippe.Nain@sophia.inria.fr