

Curriculum Vitae

António Manuel Pacheco Pires

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Chapter 1

Personal and Academic Data

Personal Data

Full name: António Manuel Pacheco Pires

Date of birth: 22/07/1964

Nationality: Portuguese

Academic address

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Degrees

- Habilitation in Mathematics, Instituto Superior Técnico (IST) – UTL, Portugal, 2006.
- Equivalence to the degree of *Doutoramento*, Technical University of Lisbon (UTL), 1994.
- PhD in Operations Research, Cornell University, USA, 1994.
- MSc in Applied Mathematics (Final grade of Very Good), IST – UTL, Portugal, 1991.
- *Licenciatura* in Probability and Statistics (Final grade of 18 out of 20), FCUL - University of Lisbon, Portugal, 1987.

Academic positions

- Associate Professor, IST – UTL, since June 2001.
- Tenured Professor, IST – UTL, since December 1999.
- Assistant Professor, IST – UTL, December 1994 – June 2001.
- Teaching Assistant, IST – UTL, September 1987 – December 1994.

Long-duration grants

- Sabbatical grant SFRH/BSAB/251/01 from FCT (Fundação para a Ciência e a Tecnologia) to visit the Georgia Institute of Technology, USA, January 2002 – July 2002.
- Grant BD/645/90-RM from JNICT (Junta Nacional de Investigação Científica e Tecnológica), to attend the PhD program at the School of Operations Research and Industrial Engineering – Cornell University, USA, July 1991 – June 1994.
- FULBRIGHT grant, to attend the PhD program at the School of Operations Research and Industrial Engineering – Cornell University, USA, August 1990 – June 1994.
- NATO-INVOTAN grant, to attend the PhD program at the School of Operations Research and Industrial Engineering – Cornell University, USA, August 1990 – June 1991.
- FLAD (Fundação Luso-Americana para o Desenvolvimento - Luso-American Foundation for Development) grant to attend the PhD program at the School of Operations Research and Industrial Engineering – Cornell University, USA, August 1990 – June 1991.
- ERASMUS grant, to continue MSc studies at the University College London, UK, February 1989 – July 1989.

Chapter 2

Scientific Activities

2.1 Coordination

- Coordinates the research line “Stochastic Processes and their Applications to Telecommunications Systems, Stochastic Process Control and Computer Science” of Group 3 (Statistics, Stochastic Processes and their Applications) of the Centre for Mathematics and Applications of IST (CEMAT), since 1995.
- Coordinates the IST team in the European Union Network of Excellence consortium Euro-FGI (Design and Engineering of the Future Generation Internet - Towards Convergent Multi-Service Networks) of the VI Framework Program of the European Union, since December 2006.
- Coordinated the IST team in the European Union Network of Excellence consortium Euro-NGI (Design and Engineering of the Next Generation Internet, Towards Convergent Multi-Service Networks) of the VI Framework Program of the European Union, December 2003 – November 2006.

2.2 Projects

- Participates in the following projects:
 - Euro-FGI, Design and Engineering of the Next Generation Internet, Towards Convergent Multi-Service Networks, on the modeling and engineering of the next generation Internet, 01/12/2006 – 31/05/2008.
 - IntM2S: Internet Traffic Measurements, Modeling and Statistical Analysis, POSC/-EIA/60061/2004, coordinated by Rui Valadas (Telecommunications Institute - IT), on measurements, modeling and statistical analysis of IP traffic, 01/01/2005 – 31/12/2006.
 - QuantLog: Logic in Quantum Computation and Information, POCI/MAT/55796/2004, coordinated by Amílcar Sernadas (IST), on logic for quantum computation and information, 01/01/2005 – 31/12/2006.
- Participated in the following projects:
 - Euro-NGI, Design and Engineering of the Next Generation Internet, Towards Convergent Multi-Service Networks, on the modeling and engineering of the next generation Internet, 01/12/2003 – 30/11/2006.
 - PERMNET: Traffic Modeling and Performance Evaluation of Multiservice Networks, POSI/42069/CPS/2001, coordinated by Carlos Belo (Telecommunications Institute - IT), on the characterization and performance analysis of multiservice telecommunications networks, 10/02/2002 – 30/06/2004.

- SCALE: Statistical Characterization of Telecommunications Traffic, POSI/34826/CPS/-2000, coordinated by Carlos Belo (Telecommunications Institute - IT), on the statistical characterization of telecommunications traffic processes, 01/01/2001 – 31/07/2002.
- PROBLOG: Probabilistic Methods in Logic of Reactive Systems, PRAXIS/P/MAT/10002/1998, coordinated by Amílcar Sernadas (IST), on stochastic models of computation, 01/03/1999 – 31/05/2001.
- ACISMAS: Analysis and Computer Implementation of Selected Methods in Applied Statistics, PRAXIS/P/MAT/41/96, coordinated by João Branco (IST), on statistical inference in multivariate analysis, categorical data analysis, and stochastic processes, 01/05/1997 – 30/04/1999.

2.3 Supervision of post-graduation students

- Supervised the following post-doc work:
 - Rafael Estepa, Modeling voice over IP multiplexion, 01/03/2005 – 31/05/2005.
- Supervised the following PhD students:
 - Fátima Ferreira
PhD in Mathematics (Doutoramento em Matemática), IST - UTL, concluded in June 2007 (Dissertation: *Embedding, Uniformization and Stochastic Ordering in the Analysis of Level-Crossing Times and $GI^X/M(n)/c$ Systems*; Thesis Committee: Maria Fernanda Ramalhoto (President), Antonis Economou, Luísa Canto e Castro de Loura, António Pacheco, Nelson Antunes, and Manuel Cabral Moraes).
 - Cláudia Nunes
PhD in Mathematics (Doutoramento em Matemática), IST - UTL, concluded in May 2003 (Dissertation: *Markov Modulated Chains*; Thesis Committee: José Manuel Ferreira (President), Guy Latouche, Maria Lucília Carvalho, Maria Fernanda Ramalhoto, Cristina Sernadas, António Pacheco, and Nelson Antunes).
 - Manuel Cabral Moraes
PhD in Mathematics (Doutoramento em Matemática), IST - UTL, concluded in February 2002 (Dissertation: *Stochastic Ordering in the Performance Analysis of Quality Control Schemes*; Thesis Committee: Francisco Sepúlveda Teixeira (President), Wolfgang Schmid, Maria Ivette Gomes, Maria Fernanda Ramalhoto, Cristina Sernadas, João Branco, and António Pacheco).
 - Nelson Antunes
PhD in Mathematics (Doutoramento em Matemática), IST - UTL, concluded in December 2001 (Dissertation: *Modeling and Analysis of Wireless Networks*; Thesis Committee: Francisco Sepúlveda Teixeira (President), Richard Serfozo, José Manuel Brázio, Maria Fernanda Ramalhoto, Cristina Sernadas, Rui Rocha, and António Pacheco), with co-supervision of Rui Rocha (DEEC - IST).
- Supervised the following MSc student:
 - Gonçalo Jacinto
MSc in Applied Mathematics (Mestrado em Matemática Aplicada), IST - UTL, concluded in July 2004 (Dissertation: *Modelo Adaptativo de Partilha de Largura de Banda em Cenário de Auto-estrada (Adaptive Bandwidth Sharing Model in a Highway Scenario)*; Thesis Committee: António Pacheco (President), Luísa Canto e Castro de Loura, Nelson Antunes, and Cláudia Nunes), with co-supervision of Nelson Antunes (University of Algarve).

- Co-supervised the following MSc student:
 - Tânia Silva
MSc in Statistics (Mestrado em Estatística), IST - UTL, concluded in April 2007 (Dissertation: *Statistical Models to Predict Electricity Prices*; Committee: António Pacheco (President), Marília Nunes, Ana Pires Parente, and Cláudia Nunes), with supervision of Cláudia Nunes (IST-UTL).
- Supervises the following students:
 - Elisabete Barata Fernandes, PhD in Statistics and Operations Research (Doutoramento em Estatística e Investigação Operacional), FCUL, since 2006, with co-supervision of Carlos Penha Gonçalves (Instituto Gulbenkian de Ciências) and Maria Teresa Alpuim (FCUL).
 - Patrícia Ferreira, PhD in Mathematics (Doutoramento em Matemática), IST - UTL, since 2006.
 - Gonçalo Jacinto, PhD in Mathematics (Doutoramento em Matemática), IST - UTL, since 2004.
 - Helena Ribeiro, PhD in Mathematics (Doutoramento em Matemática), IST - UTL, since 2002.
 - Cláudia Antunes, MSc in Statistics (Mestrado em Estatística), IST - UTL, since 2006, with co-supervision of Manuel Cabral Morais (DM - IST).
 - Cláudia Pascoal, MSc in Mathematics and Applications (Mestrado em Matemática e Aplicações), IST - UTL, since 2006, with co-supervision of Rosário Oliveira (DM - IST).

2.4 Awards

- 3M Innovation Prize 2002 (jointly with Nelson Antunes and Rui Rocha).
- 2^o Place (ex-aequo) of Best Poster SPE-98 (Melhor Poster SPE-98) (VI Annual Meeting of the Portuguese Statistical Society (SPE)) with the poster “Comparação Estocástica de Tempos de Primeira Passagem: uma aplicação a controlo de qualidade, filas de espera e fiabilidade” (joint work with Manuel Cabral Morais).
- Co-winner of Olympics of Mathematics 1982 (Olimpiadas de Matemática 1982), Education Ministry of Portugal.

2.5 Publications and thesis

Books (editor)

- C.D. Paulino, A. Pacheco, A. Pires, and Ferreira da Cunha, editors. *Afirmar a Estatística: Um desafio para o século XXI (Reinforcing Statistics: A challenge for the XXI century)*. Edições SPE, Lisboa, 1999. In Portuguese.

Chapters in books

- A. Pacheco and N.U. Prabhu. Markov-additive processes of arrivals. In J.H. Dshalalow, editor, *Advances in Queueing: Theory, Methods and Open Problems*, Chap. 6, pp. 167–194. CRC, Boca Raton, Florida, 1995.

Papers in journals

- M. Cabral Morais and A. Pacheco. Shewhart schemes with variable sampling intervals revisited. *Sequential Analysis* 26(3):265-282, 2007.
- F. Ferreira and A. Pacheco. Comparison of level-crossing times for Markov and semi-Markov processes. *Statistics & Probability Letters*, 77(2): 151-157, 2007.
- M. Rosário de Oliveira, R. Valadas, A. Pacheco, and P. Salvador. Cluster analysis of Internet users based on hourly traffic utilization. *IEICE Transactions on Communications*, E90-B: 1594-1607, 2007.
- M. Cabral Morais, Y. Okhrin, A. Pacheco, and W. Schmid. On the stochastic behaviour of the run length of EWMA control schemes for the mean of correlated output in the presence of shifts in σ . *Statistics & Decisions*, 24(4): 397-413, 2006.
- M. Cabral Morais and A. Pacheco. Combined CUSUM–Shewhart schemes for binomial data. *Economic Quality Control*, 21(1): 43-57, 2006.
- M. Cabral Morais and A. Pacheco. Assessing the impact of head starts in the performance of one-sided Markov-type control schemes. *Sequential Analysis*, 25(4): 405-420, 2006.
- F. Ferreira and A. Pacheco. Analysis of $GI/M/s/c$ queues using uniformization. *Computers and Mathematics with Applications*, 51(2): 291-304, 2006.
- M. Kwiatkowska, G. Norman, and A. Pacheco. Model checking Expected Time and Expected Reward formulae with random time bounds. *Computers and Mathematics with Applications*, 51(2): 305-316, 2006.
- A. Pacheco and H. Ribeiro. Algorithms for computing moments of the length of busy-periods of single-server systems. *WSEAS Transactions on Computers*, 11(5):2856-2861, 2006.
- N. Antunes, C. Nunes, and A. Pacheco. Functionals of Markovian Branching Processes. *Stochastic Models*, 21(2-3):261-278, 2005.
- F. Ferreira and A. Pacheco. Level-crossing ordering of semi-Markov processes and Markov chains. *Journal of Applied Probability*, 42(4): 989-1002, 2005.
- F. Ferreira and A. Pacheco. Level crossing ordering of skip-free-to-the-right continuous-time Markov chains. *Journal of Applied Probability*, 42(1):52-60, 2005.
- M. Cabral Morais and A. Pacheco. A note on the ageing character of the run length of Markov-type quality control schemes. *Journal of Applied Probability*, 41:1243-1247, 2004.
- A. Nogueira, P. Salvador, R. Valadas, and A. Pacheco. Fitting self-similar traffic by a superposition of MMPPs modeling the distribution at multiple time scales. *IEICE Transactions*, E87-B(3):678–688, 2004.
- P. Salvador, A. Pacheco, and R. Valadas. Modeling IP traffic: joint characterization of packet arrivals and packet sizes using BMAPs. *Computer Networks*, 44(3):335–352, 2004.
- P. Mateus, M. Morais, C. Nunes, A. Pacheco, A. Sernadas, and C. Sernadas. Categorical foundations for randomly timed automata. *Theoretical Computer Science*, 308(1-3):393–427, 2003.
- A. Nogueira, P. Salvador, R. Valadas, and A. Pacheco. Modeling network traffic with multifractal behavior. *Telecommunication Systems*, 24(2):339–362, 2003.
- P. Salvador, R. Valadas, and A. Pacheco. Multiscale fitting procedure using Markov modulated Poisson processes. *Telecommunication Systems*, 23(1-2):123–148, 2003.

- N. Antunes, A. Pacheco, and R. Rocha. A Markov renewal based model for wireless networks. *Queueing Systems. Theory and Applications*, 40:247–281, 2002.
- N. Antunes, A. Pacheco, and R. Rocha. An integrated traffic model for multimedia wireless networks. *Computer Networks*, 38(1):25–41, 2002.
- M. Cabral Morais and A. Pacheco. Some stochastic properties of upper one-sided \bar{X} and EWMA charts for μ in the presence of shifts in σ . *Sequential Analysis*, 20(1-2):1–12, 2001.
- P. Mateus, A. Pacheco, J. Pinto, A. Sernadas, and C. Sernadas. Probabilistic situation calculus. *Annals of Mathematics and Artificial Intelligence*, 32(1-4):393–431, 2001.
- N. Antunes, A. Pacheco, and R. Rocha. Traffic modeling for broadband wireless networks: the highway scenario. *Advances in Performance Analysis*, 3(2):109–136, 2000.
- M. Cabral Morais and A. Pacheco. On the performance of combined EWMA schemes for μ and σ : a Markovian approach. *Communications in Statistics. Simulation and Computation*, 29(1):153–174, 2000.
- N. Antunes, R. Rocha, P. Pinto, and A. Pacheco. Impact of next-generation wireless networks requirements on teletraffic modeling. *Interoperable Communication Network*, 1(2-4):706–715, 1998.
- M. Cabral Morais and A. Pacheco. Two stochastic properties of one-sided exponentially weighted moving average control charts. *Communications in Statistics. Simulation and Computation*, 27(4):937–952, 1998.
- A. Pacheco and N.U. Prabhu. A Markovian storage model. *The Annals of Applied Probability*, 6(1):76–91, 1996.
- N.U. Prabhu and A. Pacheco. A storage model for data communication systems. *Queueing Systems. Theory and Applications*, 19(1-2):1–40, 1995.
- A. Pacheco. Some properties of the delay probability in $M/M/s/s + c$ systems. *Queueing Systems. Theory and Applications*, 15(1-4):309–324, 1994.
- A. Pacheco. Second-order properties of the loss probability in $M/M/s/s + c$ systems. *Queueing Systems. Theory and Applications*, 15(1-4):289–308, 1994.
- J. Crawford-Cabral and A. Pacheco. A craniometric study on Angolan gerbils of subgenus *Tatera* (Mammalia, Rodentia, Gerbillidae). Part II: Results from discriminant and cluster analysis. *Zoologische Abhandlungen Staatliches Museum für Tierkunde in Dresden*, 46:215–224, 1991.
- J. Crawford-Cabral and A. Pacheco. A craniometrical study on some water rats of the genus *Dasymys* (Mammalia, Rodentia, Muridae). *Garcia de Orta, Sér. Zool.*, 15(1):11–24, 1989.

Papers in serials

- M. Cabral Morais and A. Pacheco. Misleading signals in joint schemes for μ and σ . In H.-J. Lenz and P.-Th. Wilrich, editors, *Frontiers in Statistical Quality Control 8*, pp. 100–122. Physica-Verlag, Heidelberg, 2006.
- M. Cabral Morais and A. Pacheco. A note on stochastic ordering criteria in SPC for the case of correlated output. In H.-J. Lenz and P.-Th. Wilrich, editors, *Frontiers in Statistical Quality Control 7*, pp. 237–260. Physica-Verlag, Heidelberg, 2004.
- P. Salvador, A. Nogueira, R. Valadas, and A. Pacheco. Multi-time-scale traffic modeling using Markovian and L-systems models. *Lecture Notes in Computer Science*, 3262:297–306, 2004.

- A. Nogueira, P. Salvador, R. Valadas, and A. Pacheco. Modeling self-similar traffic through Markov modulated Poisson processes over multiple time scales. *Lecture Notes in Computer Science*, 2720:550–560, 2003.
- M. Kwiatkowska, G. Norman, and A. Pacheco. Model checking CSL until formulae with random time bounds. *Lecture Notes in Computer Science*, 2399:152–168, 2002.

Papers in books of refereed papers

- F. Ferreira and A. Pacheco. An efficient approach to analyze finite buffer queues with generalized Pareto interarrival times and exponential service. In T. Dohi, S. Osaki, and K. Sawaki, editors, *Recent Advances in Stochastic Operations Research*, pp. 205-224, World Scientific, Singapore, 2007.
- A. Pacheco and H. Ribeiro. Bursts and gaps of Markov renewal arrival processes. In T. Dohi, S. Osaki, and K. Sawaki, editors, *Recent Advances in Stochastic Operations Research*, pp. 245-262, World Scientific, Singapore, 2007.
- M. Cabral Morais and A. Pacheco. Ordenação Estocástica (Stochastic Ordering). In L. Canto e Castro, E.G. Martins, C. Rocha, M.F. Oliveira, M.M. Leal, and F. Rosado, editors, *Ciência Estatística*, pp. 81-84, Edições SPE, Lisboa, 2006.
- M. Cabral Morais and A. Pacheco. Ordenação estocástica: da curva de Lorenz ao controlo de qualidade (Stochastic Ordering: From Lorenz's curve to Quality Control). In L. Canto e Castro, E.G. Martins, C. Rocha, M.F. Oliveira, M.M. Leal, and F. Rosado, editors, *Ciência Estatística*, pp. 85-98, Edições SPE, Lisboa, 2006.
- F. Ferreira and A. Pacheco. Ordenação em excedência de nível de cadeias de Markov e processos semi-markovianos com espaço de estados ordenado (Level crossing ordering of Markov chains and semi-Markov processes with ordered state spaces). In L. Canto e Castro, E.G. Martins, C. Rocha, M.F. Oliveira, M.M. Leal, and F. Rosado, editors, *Ciência Estatística*, pp. 99-110, Edições SPE, Lisboa, 2006.
- A. Pacheco and H. Ribeiro. Sucessões markovianas com recompensas e visitas a conjuntos de estados em processos semi-markovianos (Markov reward sequences and visits to sets of states in semi-Markov processes). In L. Canto e Castro, E.G. Martins, C. Rocha, M.F. Oliveira, M.M. Leal, and F. Rosado, editors, *Ciência Estatística*, pp. 545-557, Edições SPE, Lisboa, 2006.
- F. Ferreira and A. Pacheco. Ordenação estocástica em excedência de nível de processos semi-markovianos (Level-crossing ordering of semi-Markov processes). In C.A. Braumann, P. Infante, M.M. Oliveira, R. Alpizar-Jara, and F. Rosado, editors, *Estatística Jubilar*, pp. 281-292, Edições SPE, Lisboa, 2005. In Portuguese.
- G. Jacinto, A. Pacheco, and N. Antunes. Avaliação de medidas de controlo de redes de comunicação sem fios (Evaluation of control measures for wireless communication networks). In C.A. Braumann, P. Infante, M.M. Oliveira, R. Alpizar-Jara, and F. Rosado, editors, *Estatística Jubilar*, pp. 379-390, Edições SPE, Lisboa, 2005. In Portuguese.
- A. Pacheco and H. Ribeiro. Visitas a conjuntos de estados em processos semi-markovianos (Visits to set of states in semi-Markov processes). In C.A. Braumann, P. Infante, M.M. Oliveira, R. Alpizar-Jara, and F. Rosado, editors, *Estatística Jubilar*, pp. 537-548, Edições SPE, Lisboa, 2005. In Portuguese.
- M. Cabral Morais and A. Pacheco. Taxas de alarme de esquemas de controlo markovianos (Alarm rates in Markovian control schemes). In P.M.M. Rodrigues, E.L. Rebelo, and F. Rosado, editors, *Estatística com Acaso e Necessidade*, pp. 483-491, Edições SPE, Lisboa, 2004. In Portuguese.

- F. Ferreira and A. Pacheco. Análise de sistemas $GI^B/M/s/c$ via ordenação estocástica (Analysis of $GI^B/M/s/c$ via stochastic ordering). In P.M.M. Rodrigues, E.L. Rebelo, and F. Rosado, editors, *Estatística com Acaso e Necessidade*, pp. 213-224, Edições SPE, Lisboa, 2004. In Portuguese.
- G. Jacinto, A. Pacheco, and N. Antunes. Modelo adaptativo de partilha de largura de banda em cenário de auto-estrada (Bandwidth sharing model in a highway scenario). In P.M.M. Rodrigues, E.L. Rebelo, and F. Rosado, editors, *Estatística com Acaso e Necessidade*, pp. 349-360, Edições SPE, Lisboa, 2004. In Portuguese.
- C. Nunes and A. Pacheco. Cadeias Markov moduladas (Markov modulated chains). In P.M.M. Rodrigues, E.L. Rebelo, and F. Rosado, editors, *Estatística com Acaso e Necessidade*, pp. 529-540, Edições SPE, Lisboa, 2004. In Portuguese.
- F. Ferreira and A. Pacheco. Análise de filas $GI/M/s/c$ utilizando uniformização (Analysis of $GI/M/s/c$ queues using uniformization). In P. Brito, A. Figueiredo, F. Sousa, P. Teles, and F. Rosado, editors, *Literacia e Estatística*, pp. 261-272. Edições SPE, Lisboa, 2003. In Portuguese.
- C. Nunes and A. Pacheco. Sojourn and passage times in Markov chains. In G. Latouche and P.J. Taylor, editors, *Matrix-Analytic Methods Theory and Applications*, pp. 311-332. World Scientific, New Jersey, 2002. In Portuguese.
- M. Cabral Morais and A. Pacheco. Misleading signals em esquemas conjuntos para μ e σ (Misleading signals in joint schemes for μ and σ). In P. Oliveira and E. Athayde, editors, *Um Olhar Sobre a Estatística*, pp. 334-348. Edições SPE, Lisboa, 2001. In Portuguese.
- M. Cabral Morais and A. Pacheco. Ordenação estocástica na análise de desempenho de esquemas de controlo de qualidade (Stochastic ordering in the performance analysis of quality control schemes), In M.M. Neves, J. Cadima, M.J. Martins, and F. Rosado, editors, *A Estatística em Movimento*, pp. 247-260. Edições SPE, Lisboa, 2001. In Portuguese.
- M. Cabral Morais and A. Pacheco. Comparação estocástica de tempos de primeira passagem: uma aplicação a controlo de qualidade, fiabilidade e filas de espera (Stochastic comparison of first passage times: Applications to quality control, reliability and queues). In C.D. Paulino, A. Pacheco, A. Pires, and Ferreira da Cunha, editors, *Afirmar a Estatística: Um desafio para o século XXI*, pp. 303-314. Edições SPE, Lisboa, 1999. In Portuguese.
- C. Nunes and A. Pacheco. Estimação paramétrica em MMPP's (Parametric estimation of MMPPs). In C.D. Paulino, A. Pacheco, A. Pires, and Ferreira da Cunha, editors, *Afirmar a Estatística: Um desafio para o século XXI*, pp. 327-340. Edições SPE, Lisboa, 1999. In Portuguese.
- M. Cabral Morais and A. Pacheco. Ordenação estocástica: um pouco de história e aplicações (Stochastic ordering: Some history and applications). In M. Souto de Miranda and I. Pereira, editors, *Estatística: A Diversidade na Unidade*, pp. 221-235. Edições Salamandra, Lisboa, 1998. In Portuguese.
- A. Pacheco. Uma equação de modelos de inventário em tempo contínuo (A storage equation in continuous time). In R. Vasconcelos, I. Fraga Alves, L. Canto e Castro, and D. Pestana, editors, *A Estatística a Decifrar o Mundo*, pp. 217-230. Edições Salamandra, Lisboa, 1997. In Portuguese.

Papers in conference proceedings with refereeing

- F. Ferreira, A. Pacheco, and H. Ribeiro (2007). Markov regenerative analysis of finite oscillating queueing systems. In T. Dohi, S. Osaki e K. Sawaki, editors, *Procs. of the International Workshop on Recent Advances in Stochastic Operations Research - RASOR 2007, Nanzan University, Japan, 5/03/2007 - 6/03/2007*, pp. 52-60, 2007.

- A. Pacheco and H. Ribeiro. Algorithmic approach to compute moments of the duration of busy periods in oscillating queueing systems. In T. Dohi, S. Osaki e K. Sawaki, editors, *Procs. of the International Workshop on Recent Advances in Stochastic Operations Research - RASOR 2007, Nanzan University, Japan, 5/03/2007 - 6/03/2007*, pp. 235-242, 2007.
- A. Pacheco e H. Ribeiro. Consecutive customer loss probabilities in $M/G/1/n$ and $GI/M(m)/n$ systems. *Procs. SMCTools – Tools for Solving Structured Markov Chains, Pisa, Itália, 10/10, 2006*.
- N. Antunes, C. Nunes, and A. Pacheco. Sojourn time of elastic flows under perturbation of unresponsive traffic. *Procs. Second Conference on Next Generation Internet Networks – Traffic Engineering, Valencia, Spain, 03/04–05/04, 2006*.
- M.R. de Oliveira, L. Sertório, R. Valadas, and A. Pacheco. Decomposition of network flows with applications to cluster analysis of Internet access traffic. *Procs. Second Conference on Next Generation Internet Networks – Traffic Engineering, Valencia, Spain, 03/04–05/04, 2006*.
- F. Ferreira and A. Pacheco. An efficient approach to analyze finite buffer queues with generalized Pareto interarrival times and exponential service. In T. Dohi, S. Osaki, and K. Sawaki, editors, *Procs. International Workshop on Recent Advances in Stochastic Operations Research (RASOR 2005), Canmore, Canada, 25/08-26/08, 2005*, pp. 34-41, 2005.
- A. Pacheco and H. Ribeiro. Bursts and gaps of Markov renewal arrival processes. In T. Dohi, S. Osaki, and K. Sawaki, editors, *Procs. International Workshop on Recent Advances in Stochastic Operations Research (RASOR 2005), Canmore, Canada, 25/08-26/08, 2005*, pp. 211-218, 2005.
- F. Ferreira and A. Pacheco. Simulation of semi-Markov processes and Markov chains ordered in level crossing. *Procs. First Conference on Next Generation Internet Networks – Traffic Engineering, Rome, Italy, 18/04/2005 – 20/04/2005, 2005*.
- A. Nogueira, M.R. de Oliveira, P. Salvador, R. Valadas, and A. Pacheco. Classification of Internet users using Discriminant Analysis and Neural Networks. *Procs. First Conference on Next Generation Internet Networks – Traffic Engineering, Rome, Italy, 18/04/2005 – 20/04/2005, 2005*.
- F. Ferreira and A. Pacheco. Some results for $GI^X/M/s/c$ queues. *Procs. of The 2005 International Symposium on Applications and the Internet (SAINT 2005 Workshops), Trento, Italy, 31/01/2005 – 04/02/2005*, pp. 252-255, 2004.
- F. Ferreira and A. Pacheco. Analysis of $GI^X/M/s/c$ systems via uniformisation and stochastic ordering. In T. Czachórski and N. Pekergin, editors, *Procs. First Workshop on New Trends in Modelling, Quantitative Methods and Measurements, Zakopane, Poland, 27/06/2004 – 29/06/2004*, pp. 97-133, 2004.
- P. Mateus, A. Pacheco, and J. Pinto. Observations and the probabilistic situation calculus. In D. Fensel, F. Giunchiglia, D.L. McGuinness, and M.-A. Williams, editors, *Procs. Eighth International Conference on Principles of Knowledge Representation and Reasoning (KR2002), Toulouse, France, 22/04/2002 – 25/04/2002*, pp. 327–338. Morgan Kaufmann, 2002.
- M. Cabral Morais and A. Pacheco. Comparing first passage times of Markovian processes. In J. Janssen and N. Limnios, editors, *Procs. 2nd International Symposium on Semi-Markov Models: Theory and Applications, Compiègne, France, 09/12/1998 – 11/12/1998*, Included in the Section “Statistical Estimation II” (6 pp.), 1998.

- C. Nunes and A. Pacheco. Parameter estimation in MMPPs. In J. Janssen and N. Limnios, editors, *Procs. 2nd International Symposium on Semi-Markov Models: Theory and Applications, Compiègne, France, 09/12/1998 – 11/12/1998*, Included in the Section “Statistical Estimation II” (6 pp.), 1998.
- M.F. Ramalhoto and A. Pacheco. Coeficientes de variação e modas de algumas características importantes em filas de espera com capacidade finita (Coefficients of variation and modes of some important performance measures of queues with finite capacity). In M.A. Amaral-Turkman and M.L.S. Carvalho, editors, *Actas da 1ª Conferência em Estatística e Optimização, Tróia, Portugal, 03/12/1990 – 05/12/1990*, pp. 321–347, 1992.

Thesis

- A. Pacheco. *Markov-additive processes arising in storage models for communications systems*, PhD thesis, Cornell University, Ithaca, New York, USA, 1994. Adviser: N.U. Prabhu.
- A. Pacheco. *Sistemas M/M/r/n: Comparação de sistemas com iguais taxas de chegadas e de serviço (M/M/r/n systems: The comparison of systems with equal arrival and service rates)*, MSc thesis, IST - UTL, Lisboa, 1990. Adviser: M.F. Ramalhoto.

2.6 Communications, courses and seminars

Communication or posters in scientific meetings without mentioned publication

- F. Ferreira, A. Pacheco, and H. Ribeiro (speaker). *Service oscillating $GI^X/M(n) - M(n)/N$ queueing systems*. Euro-FGI Workshop on New Trends in Modelling, Quantitative Methods and Measurements, Ghent, Belgium, 31/05/2007 – 01/06/2007.
- A. Pacheco and H. Ribeiro (speaker). *Algorithms to compute moments of the duration of busy periods of $M^X/G/1/n$ systems*. EuroNGI - JRA.5.1 IP Traffic Characterization, Measurements and Statistical Methods – CWI, Amsterdam, The Netherlands, 7/10/2006.
- C. Antunes, M. Cabral Morais (speaker), and A. Pacheco. *Avaliação do impacto da correlação em sinais erróneos de esquemas conjuntos residuais para μ e σ^2* (Evaluation of the impact of correlation on misleading signals in joint residual schemes for μ and σ^2). XIV Annual Meeting of the Portuguese Statistical Society, Covilhã, Portugal, 27/09/2006 – 30/09/2006.
- F. Ferreira (speaker) and A. Pacheco. *Análise de filas $GI^X/M(n)/\cdot/c$ com taxas de serviço dependentes do estado do sistema e uma dada política de aceitação de clientes* (Analysis of $GI^X/M(n)/\cdot/c$ queues with state dependent service rates and a given customer acceptance policy). XIV Annual Meeting of the Portuguese Statistical Society, Covilhã, Portugal, 27/09/2006 – 30/09/2006.
- A. Pacheco and H. Ribeiro (speaker). *Probabilidades de perdas consecutivas em sistemas $M^X/G/1/n$ e $GI^X/M(m)/n$* . XIV Annual Meeting of the Portuguese Statistical Society, Covilhã, Portugal, 27/09/2006 – 30/09/2006.
- N. Antunes, C. Nunes (speaker), and A. Pacheco. *Sojourn times in a perturbed M/M/1/PS queue*. Second Madrid Conference on Queueing Theory, Madrid, Spain, 03/07/2006 – 07/07/2006.
- F. Ferreira (speaker) and A. Pacheco. *On the analysis of batch arrival GI/M/./ queues with state dependent service rates and a class of customer acceptance policies*. Second Madrid Conference on Queueing Theory, Madrid, Spain, 03/07/2006 – 07/07/2006.
- A. Pacheco and H. Ribeiro (speaker). *Consecutive customer losses in regular and oscillating $M^X/GI/1/n$ and $GI^X/M/1/n$ systems*. Second Madrid Conference on Queueing Theory, Madrid, Spain, 03/07/2006 – 07/07/2006.

- M. Cabral Morais (speaker) and A. Pacheco. *Shewhart schemes with variable sampling intervals revisited*. Frankfurter Stochastik-Tage 2006, Frankfurt, Germany, 14/03/2006 – 17/03/2006.
- F. Ferreira (speaker) and A. Pacheco. *Level crossing ordering of semi-Markov jump processes on partially ordered state spaces*. Frankfurter Stochastik-Tage 2006, Frankfurt, Germany, 14/03/2006 – 17/03/2006.
- F. Ferreira (speaker) and A. Pacheco. *Analysis of Pareto-Type/M/s/c finite buffer queues*. Second Workshop on New Trends in Modelling, Quantitative Methods and Measurements, Aveiro, Portugal, 24/11/2005 – 25/11/2005.
- A. Pacheco and H. Ribeiro (speaker). *Cumulative rewards and states visited over Markov-reward sequences*. Second Workshop on New Trends in Modelling, Quantitative Methods and Measurements, Aveiro, Portugal, 24/11/2005 – 25/11/2005.
- M.R. de Oliveira (speaker), L. Sertório, R. Valadas, and A. Pacheco. *On the structure of network traffic flows*. Second Workshop on New Trends in Modelling, Quantitative Methods and Measurements, Aveiro, Portugal, 24/11/2005 – 25/11/2005.
- M. Cabral Morais (speaker) and A. Pacheco (Invited communication). *Stochastic Ordering: from the Lorenz curve to Quality Control*. XIII Annual Meeting of the SPE, Ericeira, Portugal, 28/09/2005 – 01/10/2005.
- F. Ferreira (speaker) and A. Pacheco (Invited communication). *Level Crossing Ordering of Stochastic Processes*. XIII Annual Meeting of the SPE, Ericeira, Portugal, 28/09/2005 – 01/10/2005.
- C. Nunes (speaker), A. Pacheco, and T. Silva. *Modelação estocástica do mercado de electricidade* (Stochastic modeling of the electricity market). XIII Annual Meeting of the SPE, Ericeira, Portugal, 28/09/2005 – 01/10/2005.
- L. Sertório (speaker), M.R. de Oliveira, R. Valadas, and A. Pacheco. *Análise estrutural do tráfego da Internet* (Structural analysis of Internet traffic). XIII Annual Meeting of the SPE - Ericeira, Portugal, 28/09/2005 – 01/10/2005.
- A. Nogueira (speaker), M.R. de Oliveira, P. Salvador, R. Valadas, and A. Pacheco. *Using Neural Networks to Classify Internet Users*. First Advanced Industrial Conf. on Telecommunications, Lisboa, Portugal, 17/07/2005 – 20/07/2005.
- A. Nogueira (speaker), P. Ferreira, R. Valadas, and A. Pacheco. *Multilayer Markov modulated Poisson process for modeling self-similar traffic*. 5th Conference on Telecommunications, Tomar, Portugal, 06/04/2005 – 08/04/2005.
- M. Cabral Morais (speaker) and A. Pacheco. *Esquemas com intervalos amostrais variáveis revisitados* (Variable sampling interval schemes revisited). XXII Annual Meeting of the SPE, Évora, Portugal, 29/09/2004 – 02/10/2004.
- F. Ferreira and A. Pacheco (speaker). *Stochastic ordering of semi-Markov processes*. Second International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'04), Ilkley, UK, 26/07/2004 – 28/07/2004.
- R. Valadas, A. Pacheco (speaker), P. Salvador, and A. Nogueira. *Markovian modeling of Internet traffic*. Second International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'04), Ilkley, UK, 26/07/2004 – 28/07/2004.
- F. Ferreira and A. Pacheco (speaker). *Level crossing ordering of skip-free-to-the-right continuous time Markov chains*. Euro-NGI's Workpackage 5.1 Meeting, Zakopane, Poland, 29/06/2004.

- M. Cabral Morais (speaker) and A. Pacheco. *Joint schemes for the mean and variance revisited*. Karlsruher Stochastik-Tage 2004, Karlsruhe, Germany, 23/03/2004 – 26/03/2004.
- N. Antunes, C. Nunes (speaker), and A. Pacheco. *Um sistema Markov modulado com atributos de clientes (A Markov modulated chain with Markovian attributes)*. XI Annual Meeting of the SPE, Faro, Portugal, 24/09/2003 – 27/09/2003.
- M.R. de Oliveira (speaker), R. Valadas, A. Pacheco, and P. Salvador. *Análise multivariada de perfis de Internautas (Multivariate analysis of the behavior of Internet users)*. XI Annual Meeting of the SPE, Faro, Portugal, 24/09/2003 – 27/09/2003.
- A. Nogueira, P. Salvador, R. Valadas (speaker), and A. Pacheco. *Markovian approach for modeling IP traffic behavior on different time scales*. SPIE Conference on Performance and Control of Next Generation Communication Networks, Orlando, USA, 09/09/2003 – 10/09/2003.
- A. Nogueira, P. Salvador, R. Valadas (speaker), and A. Pacheco. *A hierarchical approach based on MMPPs for modeling self-similar traffic over multiple time scales*. International Working Conference on Performance Modeling and Evaluation of Heterogeneous Networks - HET-NETs, Ilkley, West Yorkshire, UK, 21/07/2003 – 23/07/2003.
- M.R. de Oliveira, R. Valadas, A. Pacheco (speaker), and P. Salvador. *Cluster analysis of Internet users based on hourly traffic utilization*. International Working Conference on Performance Modeling and Evaluation of Heterogeneous Networks - HET-NETs – Ilkley, West Yorkshire, UK, 21/07/2003 – 23/07/2003.
- F. Ferreira (speaker) and A. Pacheco (Invited communication). *Analysis of GI/M/s/c queues via Markov regenerative processes and uniformization*. EURO/INFORMS 2003, Istanbul, Turkey, 06/07/2003 – 10/07/2003.
- P. Salvador, R. Valadas (speaker), and A. Pacheco. *Multiscale Fitting Procedure for Markov Modulated Poisson Processes*. International Conference on Telecommunication Systems, Modeling and Analysis (ICTSM), Monterey, USA, 03/10/2002 – 06/10/2002.
- N. Antunes, C. Nunes (speaker), and A. Pacheco. *Uma cadeia de Markov com atributos markovianos (A Markov modulated chain with Markovian attributes)*. X Annual Meeting of the SPE, Porto, Portugal, 25/09/2002 – 28/09/2002.
- F. Ferreira (speaker) and A. Pacheco. *Análise de filas Pareto/M/s/s+c utilizando uniformização (Analysis of Pareto/M/s/s+c systems using uniformization)*. X Annual Meeting of the SPE, Porto, Portugal, 25/09/2002 – 28/09/2002.
- N. Antunes, C. Nunes, and A. Pacheco (speaker). *A queueing network with Markov modulated input*. Second Euro-Japanese Workshop on Stochastic Risk Modelling for Finance, Insurance, Production and Reliability, Chamonix, France, 18/09/2002 – 20/09/2002.
- F. Ferreira and A. Pacheco (speaker). *Analysis of Pareto/M/s/c queues using uniformization*. Second Euro-Japanese Workshop on Stochastic Risk Modelling for Finance, Insurance, Production and Reliability, Chamonix, France, 18/09/2002 – 20/09/2002.
- M. Kwiatkowska, G. Norman, and A. Pacheco (speaker). *Model checking expected time and expected reward formulae with random time bounds*. Second Euro-Japanese Workshop on Stochastic Risk Modelling for Finance, Insurance, Production and Reliability – Chamonix, France, 18/09/2002 – 20/09/2002.
- C. Nunes and A. Pacheco (speaker). *Burstiness descriptors for DMAPs*. IFORS 2002 (The 16th Triennial Conference of the International Federation of Operational Research Societies), Edinburgh, UK, 08/07/2002 – 12/07/2002.

- P. Salvador, R. Valadas, and A. Pacheco (speaker). *Modeling IP traffic using DBMAPs*. IFORS 2002 (The 16th Triennial Conference of the International Federation of Operational Research Societies), Edinburgh, UK, 08/07/2002 – 12/07/2002.
- N. Antunes (speaker) and A. Pacheco. *Transient and asymptotic behavior of a cyclic queue with general time distributions*. First Madrid Conference on Queueing Theory, Madrid, Spain, 02/07/2002 – 05/07/2002.
- C. Nunes (speaker) and A. Pacheco. *Markov modulated chains*. First Madrid Conference on Queueing Theory, Madrid, Spain, 02/07/2002 – 05/07/2002.
- C. Nunes and A. Pacheco (speaker). *Sojourn and passage times in Markov chains*. VI Annual Southeastern Probability Days, Atlanta, USA, 19/04/2002 – 20/04/2002.
- M. Cabral Morais (speaker) and A. Pacheco. *On the alarm rates of quality control schemes*. Magdeburger Stochastik-Tage 2002, Magdeburg, Germany, 19/03/2002 – 22/03/2002.
- M. Cabral Morais (speaker) and A. Pacheco. *Ordenação estocástica na avaliação do impacto da autocorrelação em esquemas de controlo de qualidade*. National Meeting of the Portuguese Mathematical Society 2002, Coimbra, Portugal, 05/02/2002 – 08/02/2002.
- M. Cabral Morais (speaker) and A. Pacheco. *Assessing the impact of correlation in the performance of residual schemes: A stochastic ordering approach*. VIIth International Workshop on Intelligent Statistical Quality Control, Universidade de Waterloo, Canada, 05/09/2001 – 07/09/2001.
- N. Antunes (speaker), A. Pacheco, and R. Rocha. *Modelling and performance evaluation of a broadband wireless network*. 23rd European Meeting of Statisticians, Tecnopolo Funchal, Madeira, Portugal, 13/08/2001 – 18/08/2001.
- M. Cabral Morais and A. Pacheco (speaker). *Evaluating the impact of misleading signals in joint schemes for μ and σ* . 23rd European Meeting of Statisticians, Tecnopolo Funchal, Madeira, Portugal, 13/08/2001 – 18/08/2001.
- N. Antunes (speaker), A. Pacheco, and R. Rocha. *An integrated traffic model for multimedia wireless networks*. 11th INFORMS Applied Probability Society Conference, New York, USA, 25/07/2001 – 27/07/2001.
- M. Cabral Morais and A. Pacheco (speaker). *Stochastic ordering in the assessment of the impact of misleading signals in joint schemes*. 11th INFORMS Applied Probability Society Conference, New York, USA, 25/07/2001 – 27/07/2001.
- N. Antunes (speaker), A. Pacheco, and R. Rocha. *Um modelo markoviano de renascimento para redes sem fios (A Markovian-renewal model for wireless networks)*. VIII Annual Meeting of the SPE, Peniche, Portugal, 04/10/2001 – 07/10/2001.
- C. Nunes (speaker) and A. Pacheco. *Efeito da distribuição inicial do ambiente no comportamento do índice de dispersão de um MMPP(2) (On the effect of the initial distribution in the behavior of the indices of dispersion of an MMPP(2))*. VIII Annual Meeting of the SPE – Peniche, Portugal, 04/10/2001 – 07/10/2001.
- C. Nunes (speaker) and A. Pacheco. *Using MCMC in the estimation of MMPP parameters*. COMPSTAT, Utrecht, Holand, 21/08/2000 – 25/08/2000.
- N. Antunes (speaker), A. Pacheco, and R. Rocha. *A Markov renewal based model for wireless networks*. Conference on Stochastic Networks, Universidade de Wisconsin-Madison, USA, 19/06/2000 – 24/06/2000.
- N. Antunes (speaker), A. Pacheco, and R. Rocha. *Modelo de tráfego para uma rede sem fios de banda larga numa auto-estrada*. VII Annual Meeting of the SPE, Ofir, Portugal, 14/10/1999 – 16/10/1999.

- C. Nunes (speaker) and A. Pacheco. *Estimação dos estados da cadeia de Markov de um MMPP(2) (Estimation of the states of the modulator chain of an MMPP(2))*. VII Annual Meeting of the SPE, Ofir, Portugal, 14/10/1999 – 16/10/1999.
- M. Cabral Morais (speaker) and A. Pacheco. *A new procedure for reacting to an increase in the expected number of defects per sample*. 10th INFORMS Applied Probability Conference, Ulm, Germany, 26/07/1999 – 28/07/1999.
- C. Nunes (speaker) and A. Pacheco. *Estimation of HMM parameters through Bayesian sampling*. 10th INFORMS Applied Probability Conference, Ulm, Germany, 26/07/1999 – 28/07/1999.
- M. Cabral Morais and A. Pacheco (Poster). *The effect of shifts in σ in the performance of Shewart and EWMA charts for μ* . IX International Symposium on Applied Stochastic Models and Data Analysis, Lisboa, Portugal, 14/06/1999 – 17/06/1999.
- C. Nunes (speaker) and A. Pacheco. *Stability for input-output systems*. IX International Symposium on Applied Stochastic Models and Data Analysis, Lisboa, Portugal, 14/06/1999 – 17/06/1999.
- C.S.S. Nunes, J.R.Caldas Pinto (speaker), and A. Pacheco. *Two-dimensional forgetting factor*. 3rd Portuguese Conference on Automatic Control (CONTROLO'98), Coimbra, Portugal, 09/09/1998 – 11/09/1998.
- C. Nunes (speaker) and A. Pacheco. *Martingalas: uma ferramenta em Inferência Estatística (Martingales: a tool in Statistical Inference)*. V Annual Meeting of the SPE, Curia, Portugal, 11/06/1997 – 14/06/1997.
- A. Pacheco. *A storage equation on continuous time*. Workshop on Stochastic Models, Ulm, Germany, 14/09/1994 – 17/09/1994.
- A. Pacheco and N.U. Prabhu (speaker). *A Markovian storage model*. Workshop on Stochastic Models, Ulm, Germany, 14/09/1994 – 17/09/1994.

Seminars

- A. Pacheco. *Stochastic Ordering of first passage times: some contributions in Statistical Process Control and in the Level Crossing Ordering of stochastic processes*. Nagoya Institute of Technology, Nagoya, Japan, 07/03/2007.
- A. Pacheco. *Stochastic Ordering of first passage times: some contributions in Statistical Process Control and in the Level Crossing Ordering of stochastic processes*. University of Athens, Athens, Greece, 13/02/2007.
- N. Antunes, A. Pacheco (speaker), and R. Rocha. *A new stochastic modeling approach for next-generation wireless networks*. Georgia Institute of Technology, Atlanta, USA, 29/03/2002.
- M. Cabral Morais and A. Pacheco (speaker). *Stochastic Ordering and Stochastic Process Control*. Georgia Institute of Technology, Atlanta, USA, 25/01/2002.
- N. Antunes, A. Pacheco (speaker), and R. Rocha. *Traffic modeling of multimedia wireless networks*. The University of Birmingham, Birmingham, UK, 23/11/2001.
- A. Pacheco. *Processos Pontuais (Point Processes)*. IST, Lisboa, Portugal, 29/10/1999.
- M. Cabral Morais (speaker) and A. Pacheco. *Stochastic ordering in the performance analysis of quality control charts*. Technical University of Berlin, Berlin, Germany, 29/07/1999.
- A. Pacheco. *Classificação de estados em cadeias de Markov (State classification in Markov chains)*. IST, Lisboa, Portugal, 12/02/1999.

- C. Nunes (speaker) and A. Pacheco. *Estimação paramétrica em MMPP's (Parametric estimation in MMPPs)*. Portuguese Statistical Society, Lisboa, Portugal, 28/10/1998.
- A. Pacheco. *Processos aditivos de Markov em modelos de comunicação de dados (Markov-additive processes in data communications)*. Portuguese Statistical Society, Lisboa, Portugal, 25/10/1994.
- A. Pacheco (speaker) and N.U. Prabhu. *A storage model for data communication systems*. Cornell University, Ithaca, New York, USA, 11/1993.

Courses

- *Introdução às Probabilidades (Introduction to Probability)* – 10h
IST, Programa FOCO, December 1996.

2.7 Services to the scientific community

Journal editorial board

- *Associate Editor of REVSTAT*, published by *Instituto Nacional de Estatística*.

Journal paper refereeing

- Computers and Operations Research
- Journal of the Brazilian Computer Society
- Telecommunication Systems
- Queueing Systems. Theory and Applications
- RAIRO – Operations Research
- Stochastic Models
- Reliability Engineering & System Safety

Paper refereeing for conferences/workshops

- MAM6: Sixth International Conference on Matrix Analytic Methods in Stochastic Models
Beijing, China, June 11-14, 2008.
- Third EURO-NGI Conference on Next Generation Internet Networks – Design and Engineering for Heterogeneity, Trondheim, Norway, May 21-23, 2007.
- Second Conference on Next Generation Internet Networks – Traffic Engineering
Valencia, Spain, April 3-5, 2006.
- Third International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'04), Ilkley, UK, July 18-20, 2005.
- MAM5: Fifth International Conference on Matrix Analytic Methods in Stochastic Models
Pisa, Italy, June 17-21, 2005.
- First Conference on Next Generation Internet Networks – Traffic Engineering
Rome, Italy, April 18-20, 2005.

- SAINT2005: The 2005 International Symposium on Applications and the Internet Trento, Italy, January 31 - February 4, 2005.
- First International Workshop of the EURO-NGI Network of Excellence Dagstuhl Castle, Germany, June 7-9, 2004.
- IV, V, VII, VIII, IX, and XIII Annual Meetings of the Portuguese Statistical Society.

Organization/colaboration in scientific events

- Member of the *Scientific Advisory Committee* of *Sixth International Conference on Matrix Analytic Methods in Stochastic Models*, Beijing - China, June 11-14, 2008.
- President of the session *Resource Allocation and Scheduling* at the *Euro-FGI Workshop on New Trends in Modelling, Quantitative Methods and Measurements*, Ghent - Belgium, May 31 - June 1, 2007.
- Organizer of the Meeting SPE/CIM in *Probability and Statistics in Telecommunications*, Coimbra - Portugal, May 19, 2007.
- Member of the *Technical Program Committee* of the *Fourth International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'06)*, Ilkley - UK, September 11-13, 2006.
- Member of the *Technical Program Committee* of the *Second Conference on Next Generation Internet Networks – Traffic Engineering*, Valencia, Spain, April 3-5, 2006.
- Organizer of the Thematic Session “Ordenação Estocástica e Aplicações” (Stochastic Ordering and Applications), XIII Annual Meeting of the Portuguese Statistical Society, Ericeira, Portugal, September 28 - October 1, 2005.
- Member of the *Technical Program Committee* of the *Third International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'04)*, Ilkley, UK, July 18-20, 2005.
- Member of the *Scientific Advisory Committee* of *MAM5 (Fifth International Conference on Matrix Analytic Methods in Stochastic Models)*, Pisa, Italy, June 17-21, 2005.
- Member of the *Technical Program Committee* of the *First Conference on Next Generation Internet Networks – Traffic Engineering*, Rome, Italy, April 18-20, 2005.
- President of the Session W7 (Modelling and Performance Evaluation for Quality of Service in Next Generation Internet) of *SAINT2005: The 2005 International Symposium on Applications and the Internet*, Trento, January 31 - February 4, 2005.
- Member of the *Technical Program Committee* of the *Second International Conference on the Performance Modelling and Evaluation of Heterogeneous Networks (HET-NETs'04)*, Ilkley, UK, July 26-28, 2004.
- President of session at the *XI Annual Meeting of the Portuguese Statistical Society*, Faro, Portugal, September 24-27, 2003.
- President of the Session W-2-2 (Performance Evaluation) of the *Second Euro-Japanese Workshop on Stochastic Risk Modelling for Finance, Insurance, Production and Reliability*, Chamonix, France, September 18-20, 2002.
- President of the sessions *Stochastic Models I* and *Systems Methodology* at the *IFORS 2002 (The 16th triennial conference of the International Federation of Operational Research Societies)*, Edinburgh, UK, July 8-12, 2002.

- President of the Session *Economic and Social Statistics II* of the *23rd European Meeting of Statisticians*, Tecnopolo Funchal, Madeira, Portugal, August 13-18, 2001.
- Member of the organizing committee of the *VI Annual Meeting of the Portuguese Statistical Society*, Tomar, Portugal, June 9-12, 1998.
- Vice-President of session at the *International Conference on Safety and Reliability (ES-REL'97)*, Lisboa, Portugal, June 17-20, 1997.
- President of session at the *IV Annual Meeting of the Portuguese Statistical Society*, Funchal, Portugal, June 9-15, 1996.

2.8 Affiliations

- INFORMS (Institute for Operations Research and the Management Sciences).
- SPE (Portuguese Statistical Society).
- SPM (Portuguese Mathematical Society).
- AB-FLAD (Association of former grantees of FLAD - The Luso-American Foundation for Development).

Chapter 3

Pedagogical Activity

3.1 Curricular coordination

- Member of the Committee for the Reorganization of LMAC (*Licenciatura* in Applied Mathematics and Computer Science) and the MSc in Applied Mathematics (MMA) of IST, 2000.
- Coordinator, jointly with C.D. Paulino, of the revision of the curricula of the majors in Probability and Statistics of LMAC and MMA, 1998.

3.2 Course supervision

- Bachelor Degree in Industrial Systems and Engineering – Georgia Institute of Technology (GaTech):
 - Stochastic Manufacturing and Service Systems (ISyE 3232): Spring 2002.
- *Licenciatura* in Architecture, IST:
 - Probability and Statistics: 1999/00.
- *Licenciatura* in Civil Engineering, IST:
 - Probability and Statistics: 1999/00.
- *Licenciatura* in Environmental Engineering, IST:
 - Probability and Statistics: 1999/00.
- *Licenciatura* in Territorial Engineering, IST:
 - Probability and Statistics: 1999/00.
- *Licenciatura* in Physics Engineering, IST:
 - Probability and Statistics: 2002/03.

- *Licenciatura* in Applied Mathematics and Computer Science, IST:
 - Probability: 1995/96 and 1994/95.
 - Probability and Statistics I: 2002/03.
 - Stochastic Processes: 2006/07, 2004/05, 2003/04, 2002/03, 2000/01, 1999/00, 1998/99, 1997/98, and 1996/97.
 - Time Series: 2000/01, 1999/00, 1998/99, 1997/98, 1996/97, 1995/96, and 1994/95.
 - Sampling: 2003/04.
- MSc in Applied Mathematics, IST:
 - Complements of Linear Models: 2002/03.
 - Statistical Models I: 2000/01.
 - Topics in Probability and Statistics I: 1999/00 and 1998/99.
- MSc in Mathematics and Applications, IST:
 - Stochastic Processes and Applications: 2006/07.
- MSc in Statistics, IST:
 - Probability: 2005/06 and 2004/05.
 - Stochastic Processes and Applications: 2006/07 and 2005/06.

3.3 Course lecturing

- Bachelor Degree in Industrial Systems and Engineering, GaTech:
 - Stochastic Manufacturing and Service Systems (ISyE 3232): Spring 2002.
- *Licenciatura* in Architecture, IST:
 - Probability and Statistics: 1999/00 (theoretical).
- *Licenciatura* in Engenharia Biológica, IST:
 - Probability, Errors, and Statistics: 1998/99 (theoretical).
- *Licenciatura* in Civil Engineering, IST:
 - Probability and Statistics: 1997/98 and 1994/95 (theoretical); 1987/88 (practical).
- *Licenciatura* in Materials Engineering, IST:
 - Probability and Statistics: 1994/95 (theoretical); 1987/88 (practical).
- *Licenciatura* in Environmental Engineering, IST:
 - Probability and Statistics: 1999/00 (theoretical).
- *Licenciatura* in Territorial Engineering, IST:
 - Probability and Statistics: 1994/95 (theoretical).

- *Licenciatura* in Industrial Management and Engineering, IST:
 - Statistics: 1994/95 (theoretical).
- *Licenciatura* in Electrotecnic and Computer Engineering, IST:
 - Probability and Statistics: 1997/98, 1996/97, and 1995/96 (theoretical); 1987/88 (practical).
- *Licenciatura* in Physics Engineering, IST:
 - Probability and Statistics: 2002/03 (theoretical) and 1989/90 (practical).
- *Licenciatura* in Electrotecnic and Computer Engineering, IST:
 - Probability and Statistics: 1996/97 (theoretical).
- *Licenciatura* in Mechanical Engineering, IST:
 - Probability and Statistics: 1989/90, 1988/89, and 1987/88 (practical).
- *Licenciatura* in Naval Engineering, IST:
 - Probability and Statistics: 1994/95 (theoretical).
- *Licenciatura* in Chemistry Engineering, IST:
 - Probability and Statistics: 1995/96 and 1994/95 (theoretical); 1989/90, 1988/89, and 1987/88 (practical).
 - Probability, Errors, and Statistics: 1998/99 (theoretical).
- *Licenciatura* in Applied Mathematics and Computer Science, IST:
 - Probability and Statistics I: 2002/03 (theoretical).
 - Stochastic Processes: 2006/07, 2004/05, 2003/04, 2002/03, 2000/01, 1999/00, 1998/99 e 1996/97 (theoretical); 2006/07, 2004/05, 2003/04, 2000/01, 1989/90, and 1988/89 (practical).
 - Applied Stochastic Processes: 1989/90 (practical).
 - Time Series: 2000/01, 1998/99, 1997/98, 1996/97, 1995/96, and 1994/95 (theoretical).
- *Licenciatura* in Chemistry, IST:
 - Probability, Errors, and Statistics: 1998/99 (theoretical).
- MSc in Applied Mathematics, IST:
 - Complements of Linear Models: 2002/03.
 - Statistical Models I: 2000/01.
 - Statistical Models II: 2000/01.
 - Topics in Probability and Statistics I: 1999/00, 1998/99.
- MSc in Mathematics and Applications, IST:
 - Stochastic Processes and Applications: 2006/07.
- MSc in Statistics, IST:
 - Probability: 2005/06 and 2004/05.
 - Stochastic Processes and Applications: 2006/07 and 2005/06.

3.4 Supervision of students

- Supervised the following *Licenciatura* Projects (“Trabalhos Finais de Curso”):
 - Carla Miranda, LMAC - IST, December 2004 (Dissertation: *Análises Estatísticas Sobre o Pinheiro Bravo*). Project realized at IBET, with co-supervision of Cláudia Nunes (DM - IST).
 - Ana Teresa Pala, LMAC - IST, December 2004 (Dissertation: *Contribuição Estatística para a Gestão de uma Rede de Agências Bancárias*). Project realized at Newvision/Caixa Geral de Depósitos, with co-supervision of Rosário Oliveira (DM - IST).
 - Joana Lopes and Susana Ramos, LMAC - IST, December 2003 (Dissertation: *Previsão do Tempo de Espera em Balcões de Configuração Heterógenea*). Project realized at Newvision, with co-supervision of Manuel Cabral Morais (DM - IST).
 - Miguel Magalhães and Nuno Martins, LEEC - IST, September 2002 (Dissertation: *Modelos de Tráfego para Gestão de Recursos ao Nível da Interface ar em Redes UMTS*). Project realized at ONI, with co-supervision of Rui Rocha (DEEC - IST).
 - Paula Bernardino, LMAC - IST, February 2002 (Dissertation: *Ficheiro de Estabelecimentos do Instituto Nacional de Estatística: Conteúdo e Formas de Atualização*). Project done at Instituto Nacional de Estatística.
 - Ana Lúcia Paulino, LMAC - IST, December 2001 (Dissertation: *Forecasting Air Traffic for EUROCONTROL Pre-Tactical Air Traffic Flow Management*). Project done at EUROCONTROL, with co-supervision of José Assis Lopes (SAEG - IST).
 - Cláudia Vaz and Rita Ferreira, LMAC - IST, July 2001 (Dissertation: *Telecommunications Traffic Models*). Project done at the Institute of Telecommunications, with co-supervision of Carlos Belo (DEEC - IST).
 - Andreia Correia, LMAC - IST, July 2001 (Dissertation: *Aplicações de Processos de Poisson Markov Modulados*).
 - Dulce Brito, LMAC - IST, September 2000 (Dissertation: *Modelos ARMA Bidimensionais*). Project done at the Department of Mechanical Engineering of IST, with co-supervision of J.R. Caldas Pinto (DEM - IST).
 - Carla Sofia Bambulo, LMAC - IST, December 1999 (Dissertation: *Um Tratamento Estatístico da Ocorrência de Defeitos de Carril*). Project done at the Portuguese Railway Company (CP- Caminhos de Ferro).
 - Filipa Leitão, LMAC - IST, July 1999 (Dissertation: *Atualização Automática de Capitais de Danos Próprios e Desenvolvimento de um Sistema Ótimo de Bonus-Malus*). Project done at Companhia de Seguros Fidelidade.
 - Cláudia Lavado, LMAC - IST, July 1999 (Dissertation: *Biomonitorização com Líquenes*). Project done at the Department of Mining Engineering of IST, with co-supervision of A. Jorge de Sousa (DEMinas - IST).
 - Sandra Almeida, LMAC - IST, October 1998 (Dissertation: *Modelação de Tráfego em Redes de Comunicação por Pacotes*). Project done at the Institute of Telecommunications, with co-supervision of Carlos Belo and José Brázio (DEEC - IST).
 - Ricardo Santos, LMAC - IST, September 1998 (Dissertation: *Processos de Poisson Markov-Modulados*).
 - Carla Nunes, LMAC - IST, October 1997 (Dissertation: *Introdução dum Factor de Esquecimento Bidimensional na Modelação e Previsão de Séries Temporais*). Project done at the Department of Mechanical Engineering of IST, with co-supervision of J.R. Caldas Pinto (DEM - IST).
 - Lúgia Henriques, LMAC - IST, December 1996 (Dissertation: *Modelos ARMA Bidimensionais*). Project done at the Department of Mechanical Engineering of IST, with co-supervision of J.R. Caldas Pinto (DEM - IST).

- Maria Luís Carvalho, LMAC - IST, July 1996 (Dissertation: *Defeitos nos Carris*). Project done at the Portuguese Railway Company (CP- Caminhos de Ferro).
- Catarina Tunes, LMAC - IST, May 1996 (Dissertation: *Doenças Vasculares Cerebrais em Portugal*). Project done at Instituto Nacional de Saúde Dr. Ricardo Jorge.

3.5 Course materials

- *Notas de Séries Temporais (Notes on Time Series)*, Departament of Mathematics of IST, 2001.
- *Colectânea de Exercícios de Processos Estocásticos (Collection of Exercises for Stochastic Processes)*, Departament of Mathematics of IST, 2000.
- *Colectânea de Exercícios de Probabilidades (Collection of Exercises for Probability)*, Departament of Mathematics of IST, 1995.

Chapter 4

Academic Management and Participation in Thesis Committees

4.1 Academic management

- Vice-President of the Department of Mathematics of IST, since January 2007.
- President of the Center of Mathematics and its Applications (CEMAT) of IST, since January 2007.
- Post-graduate Coordinator in Probability and Statistics of IST, since January 2007.
- Coordinator of the MSc in Statistics of IST, since January 2005.
- Coordinator of the Section of Statistics and Applications, Department of Mathematics of IST, in the periods 2003-2004 and 1997-2000.
- Member of the Executive Committee of the Applied Mathematics Center of IST, 1999-2000.
- Coordinator of the Major in Probability and Statistics of the *Licenciatura* in Applied Mathematics and Computer Science of IST in the period 1997-2000.
- Member of the group that compiled the Auto-evaluation Report of LMAC for the period 1995/96–1999/00, in the framework of the Portuguese university degrees evaluation system, 2000.

4.2 Faculty selection committees

- Teaching Assistant – Section of Statistics and Applications, Department of Mathematics of IST, UTL - September 1999.
- Monitor – Section of Statistics and Applications, Department of Mathematics of IST, UTL, in:
 - February 2007.
 - July 2005.
 - July 2004.
 - July 2003.
 - July 2001.
 - July 2000.
 - July 1999.

- July 1998.
- July 1997.
- Monitor – Section of Numerical Analysis and Applied Mathematics, Department of Mathematics of IST, UTL, in:
 - July 2000.
 - August 1999.

4.3 PhD thesis committees

- Fátima Ferreira
PhD in Mathematics (Doutoramento em Matemática), IST - UTL, June 2007. Dissertation: *Embedding, Uniformization and Stochastic Ordering in the Analysis of Level-Crossing Times and $GI^X/M(n)/c$ Systems.*
- Dulce Gomes
PhD in Mathematics (Doutoramento em Matemática), University of Évora, October 2005. Dissertation: *Processos Auto-regressivos de Coeficientes Aleatórios na Modelação de Dados de Contagem (Modeling Count Data with Autoregressive Processes with Random Coefficients).*
- João Pedro Cruz
PhD in Mathematics (Doutoramento em Matemática), University of Aveiro, September 2005. Dissertation: *Algoritmos de Aproximação Estocástica com Valor do Passo Adaptativo (Stochastic Approximation Algorithms with Adaptive Step Function).*
- Maria de Lurdes Simões
PhD in Engineering Science (Doutoramento em Ciências de Engenharia), University of O’Porto, May 2005. Dissertation: *Definição de uma Estratégia Optimizada de Controlo de Tráfego em Cruzamentos Usando Simulação Estocástica (Definition of an Optimized Strategy for Traffic Control of Crossings Using Stochastic Simulation).*
- Paulo Salvador
PhD in Electrotecnic Engineering (Doutoramento em Engenharia Electrotécnica), University of Aveiro, April 2005. Dissertation: *Modelação de Tráfego em Redes de Telecomunicações: Modelos Markovianos e Baseados em Sistemas de Lindenmayer.*
- António Nogueira
PhD in Electrotecnic Engineering (Doutoramento em Engenharia Electrotécnica), University of Aveiro, March 2005. Dissertation: *Análise e Modelação de Processos de Tráfego em Redes de Telecomunicações (Analysis and Modeling of Traffic Processes in Telecommunications Networks).*
- Cláudia Nunes
PhD in Mathematics (Doutoramento em Matemática), IST, UTL, May 2003. Dissertation: *Markov Modulated Chains.*
- Paulo Infante
PhD in Mathematics (Doutoramento em Matemática), University of Évora, January 2003. Dissertation: *Métodos de Amostragem em Controlo de Qualidade (Sampling Methods in Quality Control).*
- Manuel Cabral Morais
PhD in Mathematics (Doutoramento em Matemática), IST, UTL, February 2002. Dissertation: *Stochastic Ordering in the Performance Analysis of Quality Control Schemes.*

- Nelson Antunes
PhD in Mathematics (Doutoramento em Matemática), IST, UTL, December 2001. Dissertation: *Modeling and Analysis of Wireless Networks*.
- Paulo Mateus
PhD in Mathematics (Doutoramento em Matemática), IST, UTL, January 2001. Dissertation: *Interconnection of Probabilistic Systems*.
- João Luís Sobrinho
PhD in Electrotecnic and Computer Engineering (Doutoramento em Engenharia Electrónica e de Computadores), IST, UTL, March 1995. Dissertation: *Proposal and Performance Analysis of Multiple Access Protocols for Wireless Local Networks*.

4.4 MSc thesis committees

- Tânia Silva
MSc in Statistics (Mestrado em Estatística), IST - UTL, April 2007. Dissertation: *Statistical Models to Predict Electricity Prices*.
- Gonçalo Jacinto
MSc in Applied Mathematics (Mestrado em Matemática Aplicada), IST, UTL, July 2004. Dissertation: *Modelo Adaptativo de Partilha de Largura de Banda em Cenário de Auto-estrada (Adaptive Bandwidth Sharing Model in a Highway Scenario)*.
- Helena Ribeiro
MSc in Probability and Statistics (Mestrado em Probabilidades e Estatística), Faculty of Sciences, University of Lisbon, September 1995. Dissertation: *Filas de Espera: Estudo Teórico e Simulação de Alguns Modelos (Queues: Theoretical Study and Simulation of Some Models)*.
- Rosário Oliveira
MSc in Applied Mathematics (Mestrado em Matemática Aplicada), IST, UTL, July 1995. Dissertation: *Análise Factorial Dicotómica: Um Modelo de Variáveis Latentes para Respostas Dicotómicas (Factorial Analysis for Binary Data: A Model with Latent Variables)*.

4.5 Licenciatura project committees

- *Licenciatura* in Applied Mathematics and Computer Science of IST
 - Daniela Serrano, March 2007.
 - Ana Lara Simões, December 2004.
 - Marco Constantino, September 2004.
 - Sílvia Pedro, December 2001.
 - Carla Fagundes, July 2001.
 - Ana Lírio, December 2000.
 - Elsa Fernandes, July 2000.
 - Alexandra Martins, October 1999.
 - Vanda Murteira, July 1999.
 - Carlos Trigueiro, June 1999.
 - Renata de Carvalho, March 1998.
 - Elisa Pereira, March 1998.
 - Susana Segão, December 1997.

- Rui Paulo, October 1997.
- Joaquim Nogueira, July 1997.
- Custódia Guerreiro, May 1997.
- Carla Silva, March 1997.
- Sara Antunes, November 1996.
- Maria Conceição Caxatra, September 1996.
- Marta Veloso, April 1996.
- Isabel Sousa, February 1996.
- *Licenciatura* in Electrotecnic and Computer Engineering of IST
 - João Almeida, December 2004.

Contents

1	Personal and Academic Data	1
2	Scientific Activities	3
2.1	Coordination	3
2.2	Projects	3
2.3	Supervision of post-graduation students	4
2.4	Awards	5
2.5	Publications and thesis	5
2.6	Communications, courses and seminars	11
2.7	Services to the scientific community	16
2.8	Affiliations	18
3	Pedagogical Activity	19
3.1	Curricular coordination	19
3.2	Course supervision	19
3.3	Course lecturing	20
3.4	Supervision of students	22
3.5	Course materials	23
4	Academic Management and Participation in Thesis Committees	24
4.1	Academic management	24
4.2	Faculty selection committees	24
4.3	PhD thesis committees	25
4.4	MSc thesis committees	26
4.5	<i>Licenciatura</i> project committees	26