

Short Curriculum

João Paulo Tomé Saraiva

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Name: João Paulo Tomé Saraiva

Date of birth : 18th August 1962

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Academic degrees, fields of study, awarding institutions, dates:

PhD in Electrotechnical Engineering from the Engineering Faculty of Porto University in 1993;

Licenciate in Electrotechnical Engineering from the Engineering Faculty of Porto University in 1985.

Present position, institution, starting date:

Research Manager in the Power Systems Unit of INESC Porto;

Professor Auxiliar in the Electrotechnical and Computers Department of Faculdade de Engenharia da Universidade do Porto;

Professor Agregado in the Electrotechnical and Computers Department of Faculdade de Engenharia da Universidade do Porto since February 2002.

Previous positions, institutions, dates:

Professor Auxiliar in the Electrotechnical and Computers Department of the Engineering Faculty of Porto University since 1993;

Lecturer in the Electrotechnical and Computers Department of the Engineering Faculty of Porto University from 1985 to 1993.

Main scientific area of research:

Power system planning and operation

Integration of uncertainties in power system models

Electricity market issues

Fuzzy Sets and its Applications to Power Systems

Supervision of post-graduate students in the last five years:

name, academic degree, thesis subject, dates

- a M.Sc. Thesis entitled "Development of a Linear Optimization Model to Coordinate Overcurrent Directional Relays in Electric Networks", authored by António Silvestre Dias Braga concluded in 1996;
- a M.Sc. Thesis entitled "Simulation of Digital Protection Algorithms and Faults Using the EMTP Program", authored by António Carvalho de Andrade concluded in 1997;
- a M.Sc. Thesis entitled "Reliability Studies Using the Monte Carlo Simulation Method Considering Information Expressed as Fuzzy Numbers", authored by António Augusto Varejão Teixeira de Sousa concluded in 1997;

- a M.Sc. Thesis entitled "Fuzzy Power Flow Studies Considering Dependencies Between Nodal Injections", authored by Ana Maria Rosas de Oliveira da Rocha concluded in 1998;
- a PhD Thesis entitled "Evaluation of Voltage Stability Considering Uncertain Injection Scenarios and Identification of Control Procedures", authored by José Rui Ferreira, concluded in December 1999 (co-supervising);
- a M.Sc. Thesis entitled "Evaluation of Estimates of the Average Value of Short Term Nodal Marginal Prices Using the Monte Carlo Simulation Method", authored by Jorge Gomes Certo, concluded in September 2000;
- a M.Sc. Thesis entitled "Models to Validate From a Technical Point of View Buying/Selling Contracts of Electricity in Competitive Environment", authored by Mário Helder Gomes, concluded in September 2000;
- a M.Sc. Thesis entitled "Prototype of Market and System Operators of Electric Networks in Competitive Environment", authored by Manuel Alfredo Magalhães, concluded in September 2000;
- a PhD Thesis entitled "Adaptive State Estimation Algorithms", authored by Jorge Correia Pereira, concluded in July 2001 (co-supervising);
- a M.Sc. Thesis entitled "Development of a DMS System Using Object Oriented Programming", authored by Manuel Pedro Silva, concluded in July 2001.

Coordination of externally funded research projects

- PRAXIS XXI 2/2.1/TIT/1634/95 - PREORD - Object Oriented Parallel Platform for Optimal Operation of Distribution Networks, beginning in January 1996, end in December 1999;
- contract with ERSE - Portuguese Regulatory Board for the Electric Sector - to study and analyse Quality of Service Issues, regarding practices in several countries and proposals to incorporate in the Portuguese legislation. The final report is available in <http://www.ERSE.pt> and ERSE also published this report as a book;
- contract with ERSE - Portuguese Regulatory Board for the Electric Sector - to study and analyse tariff schemes for the use of electricity networks, beginning in September 1998, end July 2000. The final report is available in <http://www.ERSE.pt>;
- contracts with the Municipal Company responsible for the supply of water to metropolitan area of Greater Oporto (about 2.000.000 people) to evaluate proposals in the tendering process regarding the implementation of the Management and Telecontrol System of Water Supply Network;
- contract with ERSE - Portuguese Regulatory Board for the Electric Sector - to study and analyse the technical conditions of connexion of consumers and generators to electricity networks. The final report is available in <http://www.ERSE.pt>;
- contract with ERSE - Portuguese Regulatory Board for the Electric Sector - to study and analyse methodologies related to transmission and distribution expansion planning in order to evaluate the expansion plans of transmission and distribution companies, as a step of the regulatory process. This contract will finish in July 2003;
- contract with ERSE - Portuguese Regulatory Board for the Electric Sector - to study and analyse the calculation of nodal coefficients reflecting network losses and congestion to incorporate in the tariffs for use of networks. This contract will finish by November 2003;

Membership in editorial teams of scientific journals and in organization teams of scientific international meetings

include dates:

- ELAB 96 – 3º Luso-Afro-Brasilean Meeting on Distribution Energy Network Planning, Fundação Eng. António de Almeida, Porto, October 1996;
- EES-UETP Course on Applications of Modern Techniques to EMS/DMS Systems: Fuzzy Sets and Genetic Algorithms, Porto, October 1997. EES-UETP – Electric Energy Systems, University Enterprise Training Partnership – is a consortium of European utilities, universities and research institutions aiming at improving the qualification level of electric utility professionals from planning and operation departments;
- EES-UETP Course on Electricity Markets – Fundamentals and International Experiences, Porto, Portugal, October 1998;
- EES-UETP Course on Electricity Markets – Models and Tools for Utilities and Other Players, Portugal, May 2000;

- Organizing Committee of the International Conference PMAFS – Probability Methods Applied to Power Systems to be held in Funchal, Madeira Island in September 2000;
- Vice-Chair of Power Power Tech, IEEE and INESC Porto joint conference held in Porto, Portugal in September 2001;

List of Relevant Publications

- V. Miranda, M.A. Matos, J. T. Saraiva, “Fuzzy Load Flow – New Algorithms Incorporating Uncertain Generation and Load Representation”, in Proceedings of the 10th Power Systems Computation Conference, PSCC'90, Graz, August 1990;
- V. Miranda, J. P. Saraiva, "Fuzzy Modelling of Power System Optimal Load Flow", IEEE Transactions on Power Systems, vol. 7, no. 2, pag. 843-849, May 1992;
- J. T. Saraiva, V. Miranda, L.M.V.G. Pinto, "Impact on Some Planning Decisions From a Fuzzy Modelling of Power Systems", IEEE Transactions on Power Systems, vol. 9 no. 2, pag. 819-825, May 1994;
- J. T. Saraiva, V. Miranda, L.M.V.G. Pinto, "Generation/Transmission Power System Reliability Evaluation by Monte-Carlo Simulation Assuming a Fuzzy Load Description", IEEE Transactions on Power Systems, vol. 11, no. 2, pag. 690-695, May 1996;
- J. T. Saraiva, "Reliability Evaluation of Generation / Transmission Power Systems Including Fuzzy Data", Proceedings of ISCAS'96 - 1996 IEEE International Symposium on Circuits and Systems, Atlanta, USA, May 1996;
- J. T. Saraiva, V. Miranda, "Identification of Hedging Policies in Generation / Transmission Systems", in Proceedings of the 12th Power Systems Computation Conference, PSCC'96, Dresden, August 1996;
- J. T. Saraiva, "A Fuzzy Approach to Power System Energy Transactions in a Competitive Environment", in Proceedings of 35th Conference on Decision and Control - CDC'96, Kobe, Japan, December 1996;
- J. Pereira, J. T. Saraiva, V. Miranda, “Combining Fuzzy and Probabilistic Data in Power System State Estimation”, in Proceedings of Probabilistic Methods Applied to Power Systems, PMAFS'97, Vancouver, September 1997;
- J.A. Peças Lopes, A.C. Sousa, J.T. Saraiva, J.L. Silva, M.A. Matos, **Qualidade de Serviço – Caracterização da Situação e Recomendações**, Entidade Reguladora do Sector Eléctrico (Ed.), Lisboa, January 1998;
- J.T. Saraiva, “An Approach to Enhance Power System Security in Market Environment With Third Party Access”, in Proceedings of EPSOM'98, Electrical Power Systems Operation and Management Conference, Zurich, September 1998;
- J.T. Saraiva, "Evaluation of the Impact of Load Uncertainties in Spot Prices Using Fuzzy Set Models", in Proceedings of the 13th Power Systems Computation Conference, PSCC'99, Trondheim, July 1999;
- J. R. Ferreira, J. P. Lopes, J. T. Saraiva, "Identification of Preventive Control Procedures to Avoid Voltage Collapse Using Genetic Algorithms", in Proceedings of the 13th Power Systems Computation Conference, PSCC'99, Trondheim, July 1999;
- V. Miranda, J. Pereira, J. T. Saraiva, "Load Allocation in DMS with a Fuzzy State Estimator", IEEE Transactions on Power Systems, vol. 15, n° 2, pag. 529 – 534, May 2000.
- M. P. Silva, J. T. Saraiva, A. V. Sousa, “A WEB Browser Based DMS – Distribution Management System”, Proceedings of the 2000 IEEE Summer Meeting, Seattle, USA, July 2000;
- J.R. Ferreira, J.A. Peças Lopes, J. T. Saraiva, “A Real Time Approach to Identify Actions to Prevent Voltage Collapse Using Genetic Algorithms and Neural Networks”, Proceedings of the 2000 IEEE Summer Meeting, Seattle, USA, July 2000;
- M. T. Leão, J. T. Saraiva, “A Simulated Annealing Approach to Evaluate Long Term Marginal Costs and Investment Decisions”, Proceedings of the 2000 IEEE Summer Meeting, Seattle, USA, July 2000;
- V. Miranda, M. Matos, J. P. Lopes, J. T. Saraiva, J. N. Fidalgo, M. T. Leão, “Intelligent Tools in a Real-World DMS Environment”, Proceedings of the 2000 IEEE Summer Meeting, Seattle, USA, July 2000.
- M. T. Ponce de Leão, J. T. Saraiva, "Solving the Revenue Reconciliation Problem of Distribution Network Providers Using Long Term Marginal Prices", accepted for publication in IEEE Transactions on Power Systems.

- J. Certo, J. T. Saraiva, "Evaluation of Target Prices for Transmission Congestion Contracts Using a Monte Carlo Accelerated Approach", Proceedings of the IEEE 2001 Porto Power Tech, PPT 2001, Porto, Portugal, 10- 13 September 2001.
- J. T. Saraiva, J. L. Silva, M. T. Ponce de Leão, "The Portuguese Tariffs for Use of Transmission Network – Study on the Implementation of a Marginal Based Term", Proceedings of the VIII Symposium of Specialists in Electric Operational And Expansion Planning, SEPOPE' 2002, Brasília, Brasil, 19– 23 May 2002.
- M. T. Ponce de Leão, J. T. Saraiva, "An Integrated Approach to Address the Expansion Planning Problem of Distribution Networks Under Competition", Proceedings of the 14th Power Systems Computation Conference, PSCC 2002, Sevilha, July 2002.
- J. Pereira, V. Miranda, J. T. Saraiva, "Fuzzy Control of State Estimation Robustness", Proceedings of the 14th Power Systems Computation Conference, PSCC 2002, Sevilha, July 2002.