

## CURRICULUM VITÆ OF RAMON PUIGJANER

### I. PERSONAL DATA

Name: Puigjaner Trepap, Ramon.  
Place and date of birth: Barcelona, March 19, 1940  
Professional address: Universitat de les Illes Balears  
Departament de Ciències Matemàtiques i Informàtica  
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Current position: Professor of Computer Architecture and Technology (*Catedràtic d'Universitat d'Arquitectura i Tecnologia de Computadors*) of the Department of Computer and Mathematical Sciences (*Departament de Ciències Matemàtiques i Informàtica*) of the University of Balearic Islands (*Universitat de les Illes Balears*) and Director of the Polytechnic School.

### II. STUDIES

#### **Enginyer Industrial:**

Studies from 1957 to 1964 at the *Escola Tècnica Superior d'Enginyers Industrials de Barcelona*, issuing with the number 1 of the 108th promotion.

#### **Doctor Enginyer Industrial:**

Doctoral work on *Cálculo de la curva de garantía de un embalse*, presented to the *Junta General Calificadora para la obtención del título de Dr. Arquitecto y Dr. Ingeniero* in 1967 and obtaining the title in 1972. Date of the title: February 14, 1974

#### **Llicenciat en Informàtica:**

Examination in 1972 in the *Instituto de Informàtica* to obtain the title of *Técnico de Sistemas*, transformed in 1976 in *Llicenciat en Informàtica* by the *Facultad de Informàtica* of the *Universidad Politécnica de Madrid*. Date of the title: May 17, 1982

#### **Maître ès Sciences Aéronautiques:**

After receiving from 1964 to 1966 several *Stages de Perfectionnement* in the *Ecole Nationale Supérieure de l'Aéronautique de Paris*, he prepares and exposes a thesis on *Stabilité des Systèmes non Linnéaires par la Méthode de Zubov* and issued with the number 1 of the promotion of the year 1966. Date of the title: April 19, 1967

### III. TEACHING EXPERIENCE

#### **III.1 Regular teaching in Spain**

*Becari ajudant de classes pràctiques* of Statistics in the *E.T.S. d'Enginyers Industrials de Barcelona* (1962-63 and 1963-64).

*Becari ajudant de classes pràctiques* in Electrical Machines in the *E.T.S. d'Enginyers Industrials de Barcelona* (1963-64).

*Professor Encarregat de Curs* (6 hours per week) of Automatic Control in the *E.T.S. d'Enginyers Industrials de Terrassa* (1967-68 to 1974-75).

*Professor Encarregat de Curs* (3 hours per week) of Automatic Control and Computers in the *E.T.S. d'Enginyers Industrials de Barcelona* (1970-71 and 1971-72).

*Professor Adjunt* (part time) of several topics in computer science of the *Departament d'Informàtica* of the *Universitat Autònoma de Barcelona* (1972-73 to 1974-75) and *Professor Honorari* (1975-76 and 1976-77).

*Professor Adjunt d'Automàtica* (part time) in the *E.T.S. d'Enginyers Industrials de Terrassa* of the *Universitat Politècnica de Catalunya* (1975-76 and 1976-77).

*Professor Adjunt d'Automàtica* (part time) acting as *Professor Agregat* of Computer Architecture in the *Facultat d'Informàtica de Barcelona* of the *Universitat Politècnica de Catalunya* (1977-78 to 1983-84).

*Professor Titular d'Universitat* (part time) acting as *Professor Agregat* of Computer Architecture and Technology of the *Departament d'Arquitectura de Computadors* of the *Universitat Politècnica de Catalunya* (1984-85 to 1986-87).

*Professor Titular d'Universitat* (full time) of Computer Architecture and Technology in the *Departament de Ciències Matemàtiques i Informàtica* of the *Universitat de les Illes Balears* (October 1987 - June 1988).

*Catedràtic d'Universitat* (full time) of Computer Architecture and Technology of the *Departament de Ciències Matemàtiques i Informàtica* of the *Universitat de les Illes Balears* (since June 1988).

#### **III.2. Non-regular teaching**

Over 50 short courses, seminars or tutorials mainly on Performance Evaluation of Computer Systems and Computer Networks and its relation with real-time and on-line systems design taught in several cities and universities in Spain, and also in Argentina, Austria, Brazil, Canada, Chile, Colombia, Costa Rica, Cuba, Ecuador, France, Greece, Guatemala, Honduras, India, Iran, Malaysia, Mexico, Nicaragua, Panama, Paraguay, Puerto Rico, Republic of South Africa, Uruguay, USA, and Venezuela.

Regular visiting Professor since 1990 of the Université Paul Sabatier, in Toulouse (France) on performance modelling of computer networks.

Regular visiting Professor since 1990 to 1998 of the Institut National Polytechnique, in Toulouse (France) on performance modelling of computer networks.

#### IV. ACADEMIC RESPONSIBILITIES

Academic Secretary of the *Facultat d'Informàtica de Barcelona* (March-September 1977).

Head of the Computer Architecture Department of the *Facultat d'Informàtica de Barcelona* (1977-78).

Vice-Dean and Head of Studies of the *Facultat d'Informàtica de Barcelona* (October 1977 - March 1979).

Vice-Dean of Research and Third Cycle of Studies of the *Facultat d'Informàtica de Barcelona* (March - October 1979).

Dean of the *Facultat d'Informàtica de Barcelona* (November 1979 - February 1982).

Head of the Computer Architecture Department of the *Universitat Politècnica de Catalunya* (March 1982 - February 1983).

Dean of the *Facultat d'Informàtica* of the *Universitat de les Illes Balears* (July 1988 - September 1999).

Director of the *Escola Politècnica Superior* of the *Universitat de les Illes Balears* (Since September 1999).

#### V. PROFESSIONAL EXPERIENCE AT UNISYS (previously SPERRY, S.A., Division UNIVAC)

From February 1970 until September 1987 has worked in UNISYS as Systems Engineer. Main works have been:

- Development and start up of the technical and scientific applications in ENHER, including the conversion to U-9400 of a package of load flow and transient stability (1970-71).
- Operating system OS-4 support (1972-73).
- Project manager of the Ciudades Sanitarias de la Seguridad Social in Barcelona and coordinator of an international working group to develop a package of medical applications (1974-75).
- Pre-sales responsible in Barcelona (1975).
- Conversion to U-1100 and U-90 of a new package of electrical engineering (load flow, short circuits and transient stability), installing it in UNESA, ENHER and ERZ.
- Data Processing Consultant from February 1976 until September de 1987, in the following topics:
  - \* Computer systems performance evaluation to improve the performance or to justify the configuration enlargement for several Spanish (Caixa d'Estalvis de Catalunya, ENHER, BANESTO, BANKINTER, Caja Postal de Ahorros, Caja de Ahorros de Granada, CEPSA, EMPETROL, INP, RUMASA, Ministerio de Obras Públicas y Urbanismo, Unión Explosivos Rio Tinto, Club de Vacaciones, Caja de Ahorros de Avila, SPANTAX, etc.) and Portuguese (Banco do Espirito Santo e Comercial de Lisboa) customers working mainly in real-time environments.
  - \* Sizing studies to justify computer systems to work in real-time environments for more than 30 prospects using models treated by analytical and simulation methods with successful results (contracts) in many cases (ENHER, Caixa d'Estalvis de Catalunya, O.N.C.E., etc).
  - \* Benchmarks.

#### VI. RESEARCH EXPERIENCE

Author of one book on computer performance evaluation and more than 100 works (referred journal or conference papers) on computer systems and networks performance evaluation and modelling and on computer education.

From 1990 to 1992 Advisor of the COOB'92 (Organising Committee of the Barcelona'92 Olympic Games) on computer system and network sizing and performance evaluation.

From October 1990 to March 1993, responsible of the UIB participation at the Esprit II project 5409 *Comprehensive Large-Scale Engineering Methodologies and Technology Transfer, COMPLEMENT*, devoted to improve methods and tools for real-time systems design. His participation was mainly in proving the feasibility of deriving performance models from real-time annotated design descriptions. The participation of the UIB was also funded by the *Comisión Interministerial de Ciencia y Tecnología* (Ref. TIC90-1310-CE).

From October 1992 to September 1994, responsible of the UIB participation at the COMETT COMELOG devoted to teach software metrics.

Between 1992 and 1995 he participates in the project *Unidad de Interconexión para Redes IEEE 802.6 e IEEE 802.3 con Nodos ATM, UNICORN*, funded by the *Comisión Interministerial de Ciencia y Tecnología* (Ref: TIC92-1291-PB) in the *Plan Nacional de Banda Ancha, PLANBA*.

Reviewer of the Esprit II project IMSE in 1991, of the Esprit III project PYTHAGORAS from 1992 to 1995, of the Esprit IV MERCURY from 1996 to 1998, of the Esprit IV BISANTE in 1999, of the IST METSES in 2002 and of IST GeneSyS since 2002. Evaluator of IST projects in 2001.

From 1995 to 1998 responsible of the project *Desarrollo y Evaluación de Sistemas Hardware y Software para la Obtención de Tolerancia a Fallos de Software*, funded by the *Comisión Interministerial de Ciencia y Tecnología* (Ref.: TIC95-0707-C02-01).

From 1996 to 1999 responsible by delegation of the project *Entorno de Simulación para Arquitectura Cliente-Servidor y Modelación de su Comportamiento*, funded by the *Comisión Interministerial de Ciencia y Tecnología* (Ref.: TIC96-0513).

From 1996 to 1998 responsible of the participation of the UIB in the Esprit IV project n. 22354 *Hierarchical Performance Evaluation of Large Information Open Systems, HELIOS*, funded by the European Union devoted to the performance evaluation of systems based on the second generation of client server systems.

From 1996 to 1999 responsible of the participation of the UIB in the contract with TRANSTOOLS, S. A. *Modelización de las Prestaciones de MULTIBASE*, devoted to the performance evaluation of systems based on MULTIBASE.

From 1996 to 1998 responsible of the participation of the UIB in the contract with IONA Ltd. *OrbixTalk Performance Modelling*, devoted to the performance evaluation of systems based on ORBIX (an implementation of CORBA).

From 1998 to 1999 responsible of the participation of the UIB in the contract with TRANSTOOLS, S. A. *Calibración del modelo de MULTIBASE*, devoted to the calibration of the performance model of MULTIBASE.

From 1998 to 1999 responsible of the participation of the UIB in the contract with IFATEC, S. A. *Performance models of LANs and RAIDs*, devoted to the development of performance models of these software components.

From 1998 to 2000 responsible of the participation of the UIB in the contract with TRANSTOOLS, S. A. *Evaluación de prestaciones de sistemas basados en Internet*, devoted to the development of tools for evaluating the performance of Web based systems.

From 1998 to 2001 responsible of the participation of the UIB in the Esprit IV project n. 23242 *Successful User Centered Systems Engineering Development and Environment, SUCSEDE*, funded by the European Union devoted to the incorporation of non functional aspects (performance evaluation among them) to the design of real-time systems. The participation of the UIB was also funded by the *Comisión Interministerial de Ciencia y Tecnología* (Ref. TIC98-1848-CE).

From 1998 to 2001 responsible of the project *Propuesta y Análisis de las Especificaciones de CORBA en Tiempo Real*, funded by the *Comisión Interministerial de Ciencia y Tecnología* (TIC98-0483-C03-01).

Between February and June 2000 he participates in several meetings for proposal evaluation in the Action Lines IV.2.1 Concurrent systems and IV.2.4 Technologies for network management and service-level interworking.

From 2001 to 2003 responsible of the Integrated Action between Austria (Univeristät Wien) and Spain *Benchmarking para comercio electrónico (e-Business Benchmarking)*, funded by Spanish Ministries of Science and Technology and Foreign Affairs (HU2000-0009).

From 2002 to 2004 responsible of the project *Análisis de las prestaciones de entornos web*, funded by the *Ministry of Science and Technology* (TIC2001-1374-C03-01) in coordination with the Universitat Politècnica de València and the Universidad de Oviedo.

From 2003 to 2005 responsible of the Cooperation Action with Tunisia *Benchmarking pour commerce electronique*, in cooperation with the *Université de Manouba* (Tunis) funded by the AECI (Spanish Agency of International Cooperation) (24P/02).

Current research interests:

Performance prediction of on-line systems from their design description.

Performance estimation of concurrent systems (Web based, CORBA based, etc.).

High performance networks.

Network traffic characterisation

## VII. RECENT PUBLICATIONS (last 3 years)

1. *Medium Access Control Protocols for Multimedia Traffic in Wireless Networks*, in cooperation with I. F. Akyildiz, J. McNair, L. Carrasco and Y. Yesha. IEEE Network Vol. 13 n° 4, July-August 1999. pp. 39-47.
2. *Predicting the Behaviour of Three-tiered Applications: Dealing with Distributed-object Technology and Databases*, in cooperation with N. Savino, J.-L. Anciano, S. Dumas, J.-A. Corbacho, D. Boudigue and G. Gardarin. Journal on Performance Evaluation Vol. 39 num. 1-4, February 2000. pp. 207-233.
3. *Queueing Analysis of Pools in Soft Real-Time Systems*, in cooperation with C. Juiz. Computer Performance Evaluation. Modelling Techniques and Tools (B. R. Haverkort, H. C. Bohnenkamp, C. U. Smith, eds.). Lecture Notes in Computer Science 1786, Springer Verlag 2000. pp. 56-70. (ISBN 3-540-67260-5).
4. *On Modeling Overhead in Closed Multiple Class Queueing Network Models*, in cooperation with M. Curiel. Proceedings of the 2000 Symposium on Performance Evaluation of Computer and Telecommunication Systems (M. S. Obaidat, F. Davoli, M.Ajmone Marsan, eds.). The Society for Computer Simulation International, 2000. Pp. 511-519. (ISBN 1-56555-206-7).

5. *Performance Modelling of Basic and Priority Pools in Soft Real-Time Systems*, in cooperation with C. Juiz and H. Perros. Proceedings de la Conference on Simulation Methods and Applications. The Society for Computer Simulation, 2000. Pp. 145-154. (ISBN 1-56555-219-9).
6. *A Workbench to Predict the Performance of Real-Time Systems*, in cooperation with J.-L. Anciano and A. Llamosí. Proceedings de la Conference on Simulation Methods and Applications. The Society for Computer Simulation, 2000. Pp. 155-164. (ISBN 1-56555-219-9).
7. *Component-Based Approach to Model the Structure and Dynamics of Simulation Queuing Network Performance Models for Software Architectures*, in cooperation with N. Savino. Proceedings de la Conference on Simulation Methods and Applications. The Society for Computer Simulation, 2000. Pp. 193-203. (ISBN 1-56555-219-9).
8. *Using Load Dependent Servers to Reduce the Complexity of Large Client-Server Simulation Models*, in cooperation with M. Curiel. Performance Engineering. State of the Art and Current Trends (R. Dumke, C. Rautenstrauch, A. Schmietendorf, A. Scholz, eds.). Springer-Verlag, 2001. pp. 131-147. (ISBN 3-540-42145-9. ISSN 0302-9743).
9. *Performance Modelling of Interaction Protocols in Soft Real-Time Design Architecture*, in cooperation with C. Juiz and K. Jackson. Performance Engineering. State of the Art and Current Trends (R. Dumke, C. Rautenstrauch, A. Schmietendorf, A. Scholz, eds.). Springer-Verlag, 2001. pp. 300-316. (ISBN 3-540-42145-9. ISSN 0302-9743).
10. *Correlation Structure of the Batch-On/Off Model*, in cooperation with S. Galmés. Proceedings of the International Symposium on Performance Evaluation of Computer and Telecommunication Systems (M. S. Obaidat, F. Davoli, M. Ajmone Marsan, eds.). The Society for Computer Simulation, 2001. pp. 287-297. (ISBN 1-56555-240-7).
11. *Performance Evaluation Based on an Aggregate ATM Model*, in cooperation with S. Galmés. Proceedings of the Ninth International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, MASCOTS'2001. IEEE-ComSoc Press, 2001. pp. 399-406. (ISBN 0-7695 1315-8).
12. *Performance Analysis of Pools in Soft Real-time Architectures*, in cooperation with C. Juiz and H. Perros. Proceedings of the Ninth International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems. IEEE-ComSoc Press, 2001. pp.. (ISBN 0-7695 1315-8).
13. *Loss Formulas and their Application to Optimization for Cellular Networks*, in cooperation with G. Haring, R. Marie & K. Trivedi. IEEE Transactions on Vehicular Technology (ISSN 018-9545). Vol.: 50, 3. IEEE Press, 2001. pp. 664-673.
14. *Performance Analysis of Pools in Real-time Design*, in cooperation with C. Juiz. Journal on Simulation Practice and Theory (ISSN), Vol.: 9,4. Elsevier, 2002. pp. 215-240.
15. *Unified System Builder through Interacting Blocks (USBIB) for Soft Real-time Systems*, in cooperation with N. Savino, J.-L.-. Anciano, C. Juiz & S. Galmes. **Proceedings of the Workshop on Software and Performance, WOSP'2002** (ISBN 1-58113-563-7). ACM Press, 2002. pp. 83-90.
16. *Extending UML to Manage Performance Models for Software Architectures: A Queuing Network Approach*, in cooperation with N. Savino, E. Arraiz, A. Di Serio & J.-L.-. Anciano. Libro: Proceedings of the Ninth International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, SPECTS'2002 (F. Davoli, et al, eds.) (ISBN 1-56555-252-0). Simulation Council, 2002. pp. 343-349.
17. *Extending MASCOT to a Component-Based Software Performance Engineering Methodology*, in cooperation with O. Munar & C. Juiz. Proceedings of the XVII International Symposium on Computer and Information Sciences, ISCIS'2002 (E.Gelenbe, I. Cicekly, eds.) (ISBN 0-8493-1490-9). CRC Press. pp 410-414.
18. *Correlation Analysis of a Discrete-time Flexible Arrival Process*, in cooperation with S. Galmés. Computer Networks (ISSN: 1389-1286), Volume 41, pp. 795-814. Elsevier North Holland, 2003.
19. *Performance Modelling of Interaction Protocols for Component-based System Design using Object-Oriented Simulation*, in cooperation with C. Juiz. Proceedings of the Conference on **Engineering of Computer based Systems ECBS'2003** (ISBN: 0-7695-1917-2). IEEE-CS Press, 2003. pp. 115-125.
20. *An Algorithm for Computing the Mean Response Time of a Single Server Queue with Generalized On/Off Traffic Arrivals*, in cooperation with S. Galmés. Libro: Proceedings of the ACM Sigmetrics'2003 (ISBN: 1-58113-664-1). ACM Press, 2003. pp. 37-46.
21. *ATM Cell Discarding Probability over a Rayleigh Fading Channel*, in cooperation with M. Font and S. Galmés. Proceedings of the Ninth International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems, SPECTS'2002, (ISBN 1-56555-269-5). Simulation Councils, 2003. pp. 140-145.

### **VIII. MAIN INVOLVEMENT IN CONFERENCES**

- 4th International Conference on Modelling Techniques and Tools for Computer Performance Evaluation. Palma (Spain). September 1988.
- 4th IFIP International Conference on Data Communication Systems and their Performance. Barcelona. June 1990.
- 2nd IFIP International Conference on Local Communication Systems: LAN and PBX. Palma (Spain). June 1991.
- IFIP International Conference on Decentralized and Distributed Systems. Palma (Spain). September 1993.
- 6th IFIP International Conference on High Performance Networking HPN'95. Palma (Spain). September 1995.
- 10th International Conference on Modelling Techniques and Tools for Computer Performance Evaluation. Palma (Spain). September 1998.
- IFIP World Information Technologies Forum, WITFOR 2003. Vilnius (Lithuania). August 27-29, 2003.
- ACM-IFIP Latin America Networking Conference, LANC'2003. La Paz (Bolivia). October 3-5, 2003.
- 3<sup>rd</sup> IFIP Conference on Network Control and Engineering for QoS, Security and Mobility, Net-Con'2004. Palma (Spain). September-October, 2004.
- IEEE INFOCOM'2006. Barcelona (Spain). April 23-27, 2006.

### **IX. SCIENTIFIC SOCIETIES**

He is the Spanish representative at the IFIP Technical Committee 6 "Communications", chairman of the IFIP WG6.9 "Developing countries" and member of IFIP WG 6.3 "Performance Evaluation of Computer Networks", IFIP WG 6.2 "Networking and Internetworking Architecture and Protocols" and IFIP WG 10.3 "Distributed Systems" de la IFIP.

He is Senior Member of IEEE and Member of ACM.

He is Member of *Associació de Tècnics d'Informàtica*, ATI, and founder and President of this society in 1974-77.

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