Curriculum Vitae

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Ciudad Universitaria, MADRID, 28040
Date of Birth: October 24, 1964 (Spain)

RESEARCH INTERESTS

Real-time systems: high-level real-time languages, virtual machines and real-time garbage collection, cyberphysical systems. **Concurrency and Distribution:** transactional memory, models of concurrency, mobile programming languages.

EXPERIENCE:

Current Position: Associated Professor, *Complutense University of Madrid* (UCM), Madrid (Spain), since January 2010.

Previous Positions:

- Assistant Professor, Complutense University, Madrid (Spain), 1/2002 - 1/2010.
- Assistant Professor, *Polytechnique University*, Madrid (Spain), 1989-1998. During this period I did my Master studies and Master thesis.
- Software Engineer, *Iberia L.A.E.* (Spain), 1987-1988. During this period, I did my Bachelor thesis.

EDUCATION:

PHD: Computer Science. *INRIA-Rocquencourt* Paris (France), 1998-2001.
During this period I participated in the project supported by Texas Instruments: Design and implementation of a Java environment for wireless multiprocessor appliances.

BS: Computer Science (3 lective years + BS thesis).
Polytechnique University of Madrid (UPM).

MS: Computer Science (4 lective years + MS thesis).
Polytechnique University of Madrid (UPM).

PUBLICATION:

Papers in International Journals:

- M. Teresa Higuera-Toledano, José L. Risco-Martín, Patricia Arroba, and José L. Ayala. Green Adaptation of Real-Time Web Services for Industrial CPS within a Cloud Environment, IEEE Transactions on Industrial Informatics 13(3): 1249-1256 (2017).
- M. Teresa Higuera-Toledano. Java Technologies for Cyber-Physical Systems, IEEE Transactions on Industrial Informatics 13(2): 680-687 (2017).
- M. Teresa Higuera-Toledano. Hardware support for detecting illegal references in a multiapplication real-time Java environment. ACM Trans. Embedded Comput. Syst. 5(4): 753-772, 2006.
- Teresa Higuera and Valérie Issarny. Improving the Memory Management Performance of RTSJ. Concurrency and Computation: Practice and Experience (Weley Pub.), 2005.
- Teresa Higuera, Valérie Issarny, and Michel Banâtre. Memory Management for Real-time Java: an Efficient Solution using Hardware Support. *Real-Time Systems journal* (Kluwer Pub.), 2004.

Papers in Refereed International Conferences:

- M. Teresa Higuera-Toledano. Building the Java Heap with Bricks in an Embedded Real-Time Environment. Proc. of the 18th IEEE/ACM International Symposium on Distributed Simulation and Real Time Applications (DSRT). 2014.
- M. Teresa Higuera-Toledano: Object representation model for a cache memory in a real-time Java environment. Proc. of the 16th IEEE International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC). 2013.
- M. Teresa Higuera-Toledano. Hardware-based object layout in an embedded real-time Java environments. Proc. of the 17th IEEE Emerging Technology and Factory Automation(ETFA). 2012.
- David A. Siguenza-Tortosa, M. Teresa Higuera-Toledano, Guillermo Botella Juan. Efficient Implementation of (Self-)Reconfigurable Systems. Proc. of The 16th International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA). 2010.
- M. Teresa Higuera-Toledano. Analyzing Garbage Collection Techniques for Embedded Multimedia Systems. Proc. of The 16th International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA). 2010.

- M. Teresa Higuera-Toledano. Allowing Cycle References by Introducing Controlled Violations of the Assignment Rules in Real-Time Java. Proc. of the 11th International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC). 2008.

- M. Teresa Higuera-Toledano. Name-Based Write Barriers in Real-Time Java. Seventh International Conference on Computer and Information Technology (CIT). 2007.

- M. Teresa Higuera-Toledano. Towards an Extension of Real-Time Java Supporting Several Multimedia Applications. Proc. of IEEE/ACS International Conference on Computer Systems and Applications (AICCSA). 2007.

- M. Teresa Higuera-Toledano. Allowing Cycles References among Scoped Memory Areas in the Real-Time Specification of Java. Proc. of the 10th IEEE International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC). 2007.

- M. Teresa Higuera-Toledano. Towards a Revision of the Single Parent Rule in Real-Time Java, Maintaining the RTSJ Programming Model. Proc. of the 6th International Conference on Computer and Information Technology (CIT). 2006.

- M. Teresa Higuera-Toledano. The Indeterministic Behavior of Scoped Memory in Real-Time Java. Proc. of IEEE/ACS International Conference on Computer Systems and Applications (AICCSA). 2006.

- M. Teresa Higuera-Toledano: Towards an analysis of race carrier conditions in real-time Java. Proc. of 20th International Parallel and Distributed Processing Symposium (IPDPS). 2006.

- M. Teresa Higuera-Toledano: Analyzing the Memory Management Semantic and Requirements of the Real-time Specification of Java JSR-0000001. Proc. of the 9th IEEE International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC). 2006.

- M. Teresa Higuera-Toledano: Towards an Analysis of Garbage Collection Techniques for Embedded Real-Time Java Systems. Proc. of 12th IEEE Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA). 2006.

- M.T. Higuera-Toledano. Towards an Understanding of the Behavior of the Single Parent Rule in the RTSJ Scoped Memory Model. Proc. of the 11th IEEE International Symposium on Real-time Distributed Technology and Aplications Symposium (RTAS). 2005.

- M.T. Higuera-Toledano Illegal References in a Real-Time Java Concurrent Environment. Proc. of the 3rd ACS/IEEE International Conference on Computer Systems and Applications (AICCSA). 2005.

- M.T. Higuera-Toledano. Illegal References in a Real-Time Java Concurrent Environment. Proc. of the 7th International Symposium on Object-Oriented Real-Time Distributed Computing (ISORC). 2004.

- Miguel A. de Miguel and M. T. Higuera-Toledano. Runtime Management of Quality Specification for QoS-Aware Components. Proc of 30th IEEE EUROMICRO Conference (EUROMICRO). 2004.

- M .T. Higuera Hardware-based Solution Detecting Illegal References in Real-Time Java. In Proc. of the 15th IEEE EUROMICRO Conference on Real-Time Systems (EUROMICRO). 2003.

- M .T. Higuera Improving the Memory Management Performance of RTSJ In Proc. of the IEEE Joint ACM Java Grande (ISCOPE). 2002.

- M .T. Higuera and M.A. de Miguel Dynamic Detection of Acces Errors and Illegal References in RTSJ. In Proc. of the 8th IEEE International Symposium on Real-time Distributed Technology and Aplications Symposium (RTAS). 2002.

- M .T. Higuera, V. Issarny Analyzing the Pe rformance of Memory Management in RTSJ In Proc. of the 5th IEEE International Symposium on Object-oriented Real-time Distributed Computing. (ISORC). 2002.

- Teresa Higuera, Valérie Issarny, Michel Banâtre, Gilbert Cabillic, Jean-Philippe Lesot, and Frédéric Parain. Region-based Memory Management for Real-time Java. In Proc. of the 4rd IEEE International Symposium on Object-oriented Real-time Distributed Computing (ISORC). 2001.

- Teresa Higuera, Valérie Issarny, Michel Banâtre, Gilbert Cabillic, Jean-Philippe Lesot, and Frédéric Parain. Java Embedded Real-Time Systems: An Overview of Existing Solutions. Porc. of hte 3rd IEEE International Symposium on Object-oriented Real-time Distributed Computing (ISORC). 2000.

Papers in Refereed Workshops:

- M. Teresa Higuera-Toledano. Adaptive Distributed Embedded and Real-Time Java Systems Based on RTSJ. ISORC Workshop.s 2012.

- M. Teresa Higuera-Toledano. About 15 years of real-time Java. Proc. of the 10th International Workshop on Java Technologies for Real-time and Embedded Systems (JTRES). 2012.

- M. Teresa Higuera-Toledano. Using Transactional Memory to Synchronize an Adaptive Garbage Collector in Real-Time Java. ISORC Workshops. 2011.

- M. Teresa Higuera-Toledano. Making stronger and flexible the single parent rule in the real-time specification of Java. Proc. of the 6th International Workshop on Java Technologies for Real-time and Embedded Systems (JTRES). 2008.

- M. Teresa Higuera-Toledano. Studying the Behaviour of the Single Parent Rule in Real-Time Java. OTM Workshops. 2004.

- Ruth Tolosa, Jos P. Mayo, Miguel A. de Miguel, M. Teresa Higuera-Toledano, Alejandro Alonso. Container Model Based on RTSJ Services. OTM Workshops. 2003.

- Ruth Tolosa, Jos P. Mayo, Miguel A. de Miguel, M. Teresa Higuera-Toledano, Alejandro Alonso. Container Model Based on RTSJ Services. OTM Workshops. 2003.

- Valérie Issarny, Michel Banâtre, Frédéric Weis, Gilbert Cabillic, Paul Courdec, Teresa Higuera, and Frédéric Parain. Providing an Embedded Software Environment for Wireless PDAs. In *9th ACM SIGOPS European Workshop – Beyond the PC: New Challenges for the Operating System.* September 2000, Kolding, Denmark.

- Frédéric Parain, Michel Banâtre, Gilbert Cabillic, Teresa Higuera, Valérie Issarny, and Jean-Philippe Lesot. Increasing Appliance Autonomy using Energy-Aware Scheduling of Java Multimedia Applications. In *9th ACM SIGOPS European Workshop – Beyond the PC: New Challenges for the Operating System.* September 2000, Kolding, Denmark.

Journal Special Issues

- M. Teresa Higuera-Toledano, Uwe Brinkschulte, Achim Rettberg. Introduction to the Special Issue on SORT 2018. Concurrency and Computation: Practice and Experience.To appear

- M. Teresa Higuera-Toledano, Uwe Brinkschulte, Achim Rettberg. Introduction to the Special Issue on SORT 2014. Concurrency and Computation: Practice and Experience 28(14): 3709-3710 (2016)

- M. Teresa Higuera-Toledano, Andy J. Wellings. Introduction to the Special Issue on Java Technologies for Real-Time and Embedded Systems. JTRES 2012. Concurrency and Computation: Practice and Experience 26(14): 2405-2406 (2014)

- Anders P. Ravn, M. Teresa Higuera-Toledano. Introduction to the special issue on Java technologies for real-time and embedded system. JTRES 2011. Concurrency and Computation: Practice and Experience 25(16): 2225-2226 (2013)

- M. Teresa Higuera-Toledano, Uwe Brinkschulte, Achim Rettberg. Introduction to the Special Issue SORT 2010. Concurrency and Computation: Practice and Experience 24(16): 1819-1820 (2012)

- Martin Schoeberl, M. Teresa Higuera-Toledano. Introduction to the Special Issue. JTRES 2009. Concurrency and Computation: Practice and Experience 23(14): 1607-1608 (2011)

- M. Teresa Higuera-Toledano, Doug Locke, Angelo Corsaro. Introduction to special issue on Java technologies for real-time and embedded systems. ACM Trans. Embedded Comput. Syst. 10(1) (2010)

Book Chapters:

- Higuera-Toledano. *Composing Adaptive Distributed Embedded and Real-Time Java Systems Based on RTSJ.* In: *Self-Organization in Embedded Real-Time Systems.* Springer, 2013

- Higuera-Toledano, segio Yovine, and Diego Garbervetsky. *Region-Based Memory Management: An Evaluation of Its Support in RTSJ.* In: *Distributed, Embedded and Real-time Java Systems* Springer, 2012

- M. Teresa Higuera-Toledano, Martin Schoeberl: Proceedings of the 7th International Workshop on Java Technologies for Real-Time and Embedded Systems, JTRES 2009, Madrid, Spain, September 23-25, 2009. ACM International Conference Proceeding Series, ACM 2009, ISBN 978-1-60558-732-5

- Gilbert Cabillic, Jean-Philippe Lesot, Frédéric Parain Michel Banâtre, Teresa Higuera, Valérie Issarny, Gerard Chauvel, Serge Laserre and Dominique Dinverno. *A Flexible Distribute Java Environment For Wireless PDA Architectures Based on DSP Technology.* In: *The Application of Programmable DSPs in Mobile Communications.* Editing by John Wiley & Sons, 2005

Edited Books

- Higuera-Toledano, M. Teresa, Brinkschulte, Uwe, Rettberg. *Self-Organization in Embedded Real-Time Systems.* Springer, 2013

- Higuera-Toledano, M. Teresa, Wellings, Andy J. *Distributed, Embedded and Real-time Java Systems* Springer, 2012

- Proceedings of the 8th 11th IEEE International Symposium on Object and Component-Oriented Real-Time Distributed Computing (ISORC), 2010.

- Proceedings of the 7th International Workshop on Java Technologies for Real-time and Embedded Systems (JTRES), 2009.

Papers in Refereed National Journals:

- Frédéric Parain, Michel Banâtre, Gilbert Cabillic, Teresa Higuera, Valérie Issarny, and Jean-Philippe Lesot. Techniques de réduction de la consommation dans les systèmes embarqués temps réel.

  Revue Technique et Science Informatiques (TSI), 2001, Volume 20 - n^o 10/2001.

Other Publications:

- Teresa Higuera. Hardware/Software-based Memory Management for Real-time Java. *In Proceedings of CFSE 2001 – Le 2ème Conférence Francáise sur les Systèmes d'Exploitation* Organisée par l'Association ACM-SIGOPS de France. Avril 2001, Paris, France.
- *Java as Language Support for Embedded Real-Time Systems.* February 1999, INRIA, France.
- *Making the Java Garbage Collection Real-Time.* April 2000, INRIA, France.

Conference Program Committees:

- Winter Simulation Conference (WSC), since 2017
- IEEE International Symposium on Object and Component-Oriented Real-Time Distributed Computing (ISORC), since 2010.
- IEEE Workshop on Self-Organizing Real-Time Systems (SORT), since 2010.
- Java Technologies for Real-time and Embedded Systems (JTRES) workshop, since 2003.

Organiced Conferences:

- Winter Simulation Conference (WSC), 2018
- IEEE International Symposium on Object and Component-Oriented Real-Time Distributed Computing (ISORC), 2010.
- IEEE Workshop on Self-Organizing Real-Time Systems (SORT), since 2010.
- Java Technologies for Real-time and Embedded Systems (JTRES) workshop, 2009.

Journal Revisions:

- IEEE Transactions on Industrial Informatics
- IEEE Industrial Electronics Magazine
- IEEE Transactions on Parallel and Distributed Systems
- IEEE Transactions on Computers
- Transactions on Mobile Computing.
- journal of Computing
- Journal of Parallel and Distributed Computing
- EURASIP Journal on Embedded Systems
- Journal of Systems Architecture
- Journal of Supercomputing
- Computer Languages, Systems & Structures

PATENTS:

- *Data Processing Apparatus, System and Method.* - Europe Number #0040344.5. November 2000. With collaboration of Gerard Chauvel, Serge Laserre, Dominique Dinverno, Gilbert Cabillic, Jean-Philippe Lesot, Michel Banâtre, Valérie Issarny, and Frédéric Parain.
- Extended to USA Number #7,941,790. May 2011

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