

RAFAEL TOLOSANA CALASANZ

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Biography

Rafael Tolosana-CalasanZ received his PhD in 2010 from the Universidad de Zaragoza. He is currently an Associate Professor at the Computer Science Department at the Universidad de Zaragoza. His research interests include Resource Management and Fault Tolerance in distributed computing. Rafael regularly serves on the editorial boards and organizing committees of a number of journals and international conferences and workshops.

He was a guest editor for the Computers & Electrical Engineering Journal and the Sustainable Computing: Informatics and Systems Journal, organizing 5 special issues in cloud computing. He was an associate editor for the Computers & Electrical Engineering Journal in 2015. He is currently an associate editor for the Internet of Things Engineering Cyber Physical Human Systems Journal and for the IEEE Transactions on Parallel and Distributed Computing Journal.

Rafael has co-chaired the International Workshop on Clouds and (eScience) Applications Management workshop from 2014 to 2019. He served as a workshop co-chair in 2015 and as a tutorial chair in 2016 for the IEEE/ACM International Conference on Utility and Cloud Computing (UCC). Rafael regularly serves on the technical program committees of a number of international conferences and workshops.

Education

PhD 2005-2010	PhD in Computer Science. Universidad de Zaragoza
MSc 2004-2005	Master of Computer Science. Universidad de Zaragoza
BEng 1998-2003	Bachelor of Engineering in Computer Science

Academic Positions

Associate Professor (tenure track) 2018- present	Computer Science Department. Universidad de Zaragoza
Associate Professor 2013-2018	Computer Science Department. Universidad de Zaragoza
Assistant Professor 2010-2013	Computer Science Department. Universidad de Zaragoza
Graduate Assistant Professor 2005-2010	Computer Science Department. Universidad de Zaragoza

Research

Rafael's research interests lie in the intersection between Intelligent Systems and Distributed Computing. I am particularly interested in how techniques from autonomic computing and artificial intelligence could be exploited in order to enhance computational resource management in distributed systems. This interest has led me to study a number of possible aspects over the recent years including:

The integration of fault tolerant techniques at the problem specification level (i.e. exception handling), so that in combination with checkpointing different resources can be used to complete the execution of applications. The integration of resource management mechanisms within existing distributed computing infrastructures, in particular with cloud and edge computing to: (i) evaluate where such resource management strategies could be most suitable; (ii) investigate techniques for undertaking such integration in practice. Understanding how requirements of emerging applications – such as streaming and IoT applications impact (1) and (2) – and validate these with realistic end user applications.

Selected Publications

My research interests lie in the intersection between Intelligent Systems and Distributed Computing. I am particularly interested in how techniques from autonomic computing and artificial intelligence could be exploited in order to enhance computational resource management in distributed systems. This interest has led me to study a number of possible aspects over the recent years including:

1. Victor Medel Gracia, Rafael Tolosana-Calasanz, Jose Angel Bañares, Unai Arronategui, Omer F. Rana: Characterising resource management performance in Kubernetes. *Computers & Electrical Engineering* 68: 286-297 (2018)
2. Rafael Tolosana-Calasanz, José Ángel Bañares, José Manuel Colom: Model-driven development of data intensive applications over cloud resources. *Future Generation Comp. Syst.* 87: 888-909 (2018)
3. Rafael Tolosana-Calasanz, Javier Diaz Montes, Omer F. Rana, Manish Parashar, Erotokritos Xydias, Charalampos E. Marmaras, Panagiotis Papadopoulos, Liana Cipcigan: Computational resource management for data-driven applications with deadline constraints. *Concurrency and Computation: Practice and Experience* 29(8) (2017)
4. Rafael Tolosana-Calasanz, Javier Diaz Montes, Omer F. Rana, Manish Parashar: Feedback-Control & Queueing Theory-Based Resource Management for Streaming Applications. *IEEE Trans. Parallel Distrib. Syst.* 28(4): 1061-1075 (2017)
5. Rafael Tolosana-Calasanz, Jose Angel Bañares, Congduc Pham, Omer F. Rana: Resource management for bursty streams on multi-tenancy cloud environments. *Future Generation Comp. Syst.* 55: 444-459 (2016)
6. Rafael Tolosana-Calasanz, Jose Angel Bañares, Congduc Pham, Omer F. Rana: Enforcing QoS in scientific workflow systems enacted over Cloud infrastructures. *J. Comput. Syst. Sci.* 78(5): 1300-1315 (2012)
7. Rafael Tolosana-Calasanz, José A. Bañares, Omer F. Rana: Autonomic streaming pipeline for scientific workflows. *Concurrency and Computation: Practice and Experience* 23(16): 1868-1892 (2011)

8. Rafael Tolosana-Calasanz, José A. Bañares, Omer F. Rana, Pedro Álvarez, Joaquin Ezpeleta, Andreas Hoheisel: Adaptive exception handling for scientific workflows. *Concurrency and Computation: Practice and Experience* 22(5): 617-642 (2010)
9. Rafael Tolosana-Calasanz, José Ángel Bañares, Pedro Álvarez, Joaquín Ezpeleta, Omer F. Rana: An uncoordinated asynchronous checkpointing model for hierarchical scientific workflows. *J. Comput. Syst. Sci.* 76(6): 403-415 (2010)
10. Rafael Tolosana-Calasanz, Javier Nogueras-Iso, Ruben Bejar, Pedro R. Muro-Medrano, F. Javier Zarazaga-Soria: Semantic interoperability based on Dublin Core hierarchical one-to-one mappings. *IJMSO* 1(3): 183-188 (2006)

Teaching Experience

I started my teaching activity in 2005 as a graduate assistant professor at the Universidad de Zaragoza. I have taught in a number of undergraduate and master courses, mainly in introduction to programming, concurrent and distributed programming courses. Since 2012 I have taught in the Concurrent Programming undergraduate course of the Telecommunications Degree, and since 2014 at the Distributed Systems undergraduate course of the Computer Engineering degree, both at the Universidad de Zaragoza.