

*Proceedings of the*  
2011 11th International Conference on  
**Intelligent Systems Design and Applications**

**22 – 24 November 2011**  
**Córdoba, Spain**

**Sebastián Ventura**, *University of Córdoba, Spain*  
**Ajith Abraham**, *Machine Intelligence Research (MIR) Labs, USA*  
**Krzysztof Cios**, *Virginia Commonwealth University, USA*  
**Cristóbal Romero**, *University of Córdoba, Spain*  
**Francesco Marcelloni**, *University of Pisa, Italy*  
**José Manuel Benítez**, *University of Granada, Spain*  
**Eva Gibaja**, *University of Córdoba, Spain*

**IEEE Catalog Number: CFP11394-CDR**  
**ISBN: 978-1-4577-1675-1**

[Technical support & inquiries](#)  
[Research Publishing Services](#)

t:+65-6492 1137; f:+65-6747 4355; e:[enquiries@rpsonline.com.sg](mailto:enquiries@rpsonline.com.sg)

---

**Sponsors**



**Technical Sponsors**



**Technical Supporter**

**IEEE SMC Society – Technical Committee on Soft Computing**

---

Copyright and Reprint Permission: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923. For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Operations Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved. Copyright © 2011 by IEEE.