

Franco Salvador, Marc

marc.franco@symanto.com

Valencia, 46184
Valencian Community
Spain



Personal information

Nationality	Spanish
Phone	(+34) 644 26 44 47
Websites	LinkedIn · Google Scholar

Vocational area

R&D in Natural Language Processing · Deep Learning · Artificial Intelligence ·
Information Retrieval · Multilingual Data Science, Analytics, and Mining

Professional Experience

References available upon request

Since Apr. 2022	Chief Scientific Officer (NLP & AI) at Symanto, Valencia (Spain) National and international R&D projects: ANDHI - Anomalous Diffusion of Harmful Information. 2-year R&D project. Funded by the Ministry of Science and Innovation, Spain (MICIN CPP2021-008994). OBULEX - Observatory on the use of sexist language on the Internet. 15-month R&D project. Funded by the Valencian Institute of Business Competitiveness (IVACE), Spain (IVACE IMINOD/2022/106).
Since Oct. 2023	Adjunt Professor at Universidad Europea, Remote (Spain) Subjects: Artificial Intelligence (AI) projects; Project management; Intelligence and reasoning in the context of AI.
Since Aug. 2023	Scientific Advisor at Genaios, Valencia (Spain)
Since Apr. 2022	Scientific Advisor at AI Zwei, Valencia (Spain)
Since Sep. 2021	Scientific Advisor at Coinradar.ai

May 2022 - Jan. 2024	Deep Learning lecturer - Big data & data science master at Institut de Formació Contínua IL3 - Universitat de Barcelona, Remote (Spain)
Feb. 2021 - Mar. 2022	Director of Research at Symanto, Valencia (Spain)
	National and international R&D projects: ProHaters - Proactive Profiling of Hate Speech Spreaders. 3-year R&D project. Funded by the CDTI - Ministry of Science and Innovation, Spain (IDI-20210776). XAI-DisInfodemics: eXplainable AI for disinformation and conspiracy detection during infodemics. 3-year R&D project. Funded by the Ministry of Science and Innovation, Spain (PLEC2021-007681). DETEMP - Early detection of depression symptoms in social media. 15-month R&D project. Funded by the Valencian Institute of Business Competitiveness (IVACE), Spain (IMINOD/2021/72).
June. 2021 - July 2021	Collaborator - Big data & data science master at Institut de Formació Contínua IL3 - Universitat de Barcelona, Barcelona (Spain)
May 2018 - Jan. 2021	Principal Research Scientist at Symanto, Valencia (Spain)
Apr. 2017 - Apr. 2018	Innovation Lead at Symanto, Valencia (Spain)
Dec. 2016 - Apr. 2017	Data scientist at Symanto, Valencia (Spain)
Sep. 2016 - Nov. 2016	Research fellow at Data and Web Science Group, Universität Mannheim, Mannheim (Germany) Funded by DAAD (German Academic Exchange Service) in accordance with the DAAD scholarship program "STIBET-Doktoranden".
June 2016 - Aug. 2016	Data scientist at Symanto, Nuremberg (Germany)
July 2014 - May 2016	Senior technician at Pattern Recognition and Human Language Technology (PRHLT) Research Center - Universitat Politècnica de València, Valencia (Spain) Funded by: The Spanish Ministry of Economy and Competitiveness 3-year R&D project (TIN2015-71147-C2-1-P) SOMEMBED - SOcial Media language understanding - EMBEDding contexts. The Spanish Ministry of Economy and Competitiveness 3-year R&D project (MEC TIN2012-38603-C02-01) DIANA-APPLICATIONS - Finding Hidden Knowledge in Text.
Apr. 2014 - June 2014	Technical specialist at Itálica Research Group - Universidad de Sevilla, Seville (Spain) Funded by the Spanish Ministry of Economy and Competitiveness 3.5-year R&D project (TIN2011-14726-E) <i>Destilado de opiniones desde contenidos generados por usuarios</i> .
Apr. 2013 - Mar. 2014	Research fellow at Linguistic Computing Laboratory, Computer Science Department, Sapienza University of Rome, Rome (Italy) Funded by the 5-year ERC Starting Grant No. 259234 MultiJEDI: Multilingual Joint word sEnse Disambiguation.
Aug. 2012 - Dec. 2012	Senior technician at Natural Language Engineering Lab, Department of Information Systems and Computing, Universitat Politècnica de València, Valencia (Spain) Funded by the Spanish Ministry of Education and Science 4-year R&D project (CICYT TIN2009-13391-C04-03) TEXT-ENTERPRISE 2.0: Text comprehension techniques applied to the needs of the Enterprise 2.0.

Education

2013–2017	Doctor of Philosophy (PhD), Computer Science, Universitat Politècnica de València, Spain Final score: Excellent with international and cum laude distinction PhD thesis: A Cross-domain and Cross-language Knowledge-based Representation of Text and its Meaning Advisor: Paolo Rosso
2011–2013	Master of Science (MSc), Artificial Intelligence, Pattern Recognition and Digital Image, Universitat Politècnica de València, Spain Avg. score: 8.7/10 MSc thesis: Cross-Language Plagiarism Detection using a Multilingual Semantic Network Score: 10/10 - Cum laude Advisor: Paolo Rosso
2006–2011	Bachelor of Science (BSc), Computer Science Engineering (5-year degree), specialization in Artificial Intelligence, Universitat Politècnica de València, Spain Avg. score: 7/10 BSc final project: Voice-based web surfing Score: 10/10 Advisor: Carlos D. Martínez Hinarejos

Volunteer experience

Since April. 2021	City lead at Valencia AI@Spain AI, Valencia (Spain)
-------------------	--

Languages

Spanish	Mother tongue
Valencian	Mother tongue
Catalan	Mother tongue
English	Professional working proficiency
Italian	Basic competence

Certifications

June 2024	Professional Scrum™ with Kanban I (PSK I) Scrum.org
Jan. 2024	Data Protection for Employees heyData
April 2023	Microsoft Certified: Azure AI Engineer Associate Microsoft
July 2022	Professional Scrum Master™ I (PSM I) Scrum.org
Apr. 2022	Strategic Leadership and Management Specialization University of Illinois Urbana-Champaign

Dec. 2021	Digitization applied to the productive sector Confederación Española de Organizaciones Empresariales (CEOE)
Jan. 2016	Cambridge First Certificate in English (FCE) - B2 level of the Common European Framework of Reference for Languages (CEFR) University of Cambridge
Jan. 2016	Elemental Grade in Valencian - B1 level of the Common European Framework of Reference for Languages (CEFR) Generalitat Valenciana
Dec. 2015	Occupational safety: laboratory researcher profile (register number: 15/45480) Universitat Politècnica de València

Courses

Feb. 2022	First aid in babies and children. Cruz Roja Española
Oct. 2017	Bitcoin and Cryptocurrency Technologies. Offered by the Princeton University at Coursera
Feb. 2013	PROMISE Winter School 2013 - Bridging between Information Retrieval and Databases. Bressanone, Italy.
Jul. 2009	UIMP English Language Immersion Course - Intensive English Course with Native Teachers and Monitors. Barcelona, Spain.

Achievements and Awards

2024	First place at the SemEval-2024 Task 8: Multigenerator, Multidomain, and Multilingual Black-Box Machine-Generated Text Detection - Monolingual subtask A) Binary Human-Written vs. Machine-Generated Text Classification. Awarded by the 18th International Workshop on Semantic Evaluation (SemEval-2024).
2021	First place in several evaluation metrics at the eRisk 2021: Early risk prediction on the Internet shared task@CLEF - subtasks on "Early detection of signs of self-harm" and "Measuring the severity of the signs of depression".
2018	PhD thesis award for the best dissertation in the field of Information Retrieval. Awarded by the 5th Spanish Conference in Information Retrieval (CERI 2018).
2017	Cum laude PhD thesis: A Cross-domain and Cross-language Knowledge-based Representation of Text and its Meaning.
2016	First place at the SemEval-2016, task 3: community question answering - subtask B: question-question similarity. Awarded by the 10th International Workshop on Semantic Evaluation (SemEval-2016).
2013	Winner of the MAVIR 2013 national prize to the best M.Sc. thesis on Language Technologies applied to Intelligent Systems of Access to the Multilingual and Multimedia Information. Awarded by MAVIR Consortium. Ssponsored by Córex and DAEDALUS.
2013	Cum laude MSc thesis: Cross-language Plagiarism Detection using a Multilingual Semantic Network.

2013 | Third prize winner in the poster session of PROMISE Winter School 2013.

Research Internships

2015	<p>National Institute of Astrophysics, Optics and Electronics (INAOE), Puebla, Mexico</p> <p>Mentor: Dr. Manuel Montes-y-Gómez</p> <p>Funded by the Web Information Quality Evaluation Initiative (WIQ-EI) IRSES 4-year project (grant no. 269180) within the FP 7 Marie Curie People Framework.</p> <p>Date: Feb. - Mar. 2015</p>
2014	<p>International Institute of Information Technology (IIIT), Hyderabad, India</p> <p>*During this internship I have been also research intern at Veooz - URL: www.veooz.com</p> <p>Mentor: Prof. Dr. Vasudeva Varma</p> <p>Funded by the Web Information Quality Evaluation Initiative (WIQ-EI) IRSES 4-year project (grant no. 269180) within the FP 7 Marie Curie People Framework.</p> <p>Date: Oct - Dec. 2014</p>
2012	<p>Computational Research Center (CIC), Mexico D.F., Mexico & National Institute of Astrophysics, Optics and Electronics (INAOE), Puebla, Mexico</p> <p>Mentor: Prof. Dr. Grigori Sidorov & Dr. Manuel Montes-y-Gómez</p> <p>Funded by the Web Information Quality Evaluation Initiative (WIQ-EI) IRSES 4-year project (grant no. 269180) within the FP 7 Marie Curie People Framework.</p> <p>Date: Nov - Dec. 2012</p>

Competences

Artificial Intelligence	Deep learning, machine learning, data mining, natural language processing, information retrieval, machine translation
Data Mining & Machine Learning	TensorFlow, Keras, PyTorch, scikit-learn, huggingface-transformers, Weka
Programming Languages	Python, Java, C, C++, Bash
Software Development	Kanban, Scrum, Azure DevOps, Eclipse, Maven, Visual Studio, Visual Studio Code, Git
Containers & Orchestration	Docker, Kubernetes
Big Data, DB	Spark, SQL, PostgreSQL, Oracle

Publications

- 2023 A. Basile, M. Franco-Salvador, and P. Rosso. **Zero-Shot Data Maps. Efficient Dataset Cartography Without Model Training.** In *Findings of the Association for Computational Linguistics: EMNLP 2023*, pp. 8264–8277, Singapore. (CORE A)
- 2023 A. Mikael Sarvazyan, J. Á. González, M. Franco-Salvador, F. Rangel, B. Chulvi, and P. Rosso. **Overview of AuTextification at IberLEF 2023: Detection and Attribution of Machine-Generated Text in Multiple Domains.** In *Sociedad Española de Procesamiento del Lenguaje Natural (SEPLN)*, num. 71, pp. 275–288. Sep 1, 2023.
- 2023 A. Mikael Sarvazyan, J. Á. González, P. Rosso, and M. Franco-Salvador. **Supervised Machine-Generated Text Detectors: Family and Scale Matters.** In *14th International Conference of CLEF on Experimental IR meets Multilinguality, Multimodality, and Interaction (CLEF 2023)*, Springer-Verlag, LNCS(14163), pp. 121–132.
- 2023 M. China-Rios, I. Borrego-Obrador, M. Franco-Salvador, F. Rangel, and P. Rosso. **Profiling Cryptocurrency Influencers with Few-shot Learning.** In *Avi Arampatzis et al., editors, Working Notes of CLEF 2023 - Conference and Labs of the Evaluation Forum*, September 2023. CEUR-WS.org.
- 2023 J. Bevendorff, I. Borrego-Obrador, M. China-Ríos, M. Franco-Salvador, M. Fröbe, A. Heini, K. Kredens, E. Körner, M. Mayerl, P. Pezik, M. Potthast, F. Rangel, P. Rosso, E. Stamatatos, B. Stein, M. Wiegmann, M. Wolska, and E. Zangerle. **Overview of PAN 2023: Authorship Verification, Multi-Author Writing Style Analysis, Profiling Cryptocurrency Influencers, and Trigger Detection.** In *In 14th International Conference of CLEF on Experimental IR meets Multilinguality, Multimodality, and Interaction (CLEF 2023)*, Springer-Verlag, LNCS(14163), pp. 459–481.
- 2023 J. Bevendorff, M. China-Ríos, M. Franco-Salvador, A. Heini, E. Körner, K. Kredens, M. Mayerl, P. Pezik, M. Potthast, F. Rangel, P. Rosso, E. Stamatatos, B. Stein, M. Wiegmann, M. Wolska, and E. Zangerle. **Overview of PAN 2023: Authorship Verification, Multi-Author Writing Style Analysis, Profiling Cryptocurrency Influencers, and Trigger Detection.** In *Proc. of the 45th European Conference on Information Retrieval (ECIR 2023)*, Dublin, Ireland, 2nd-6th April, 2023. (CORE A)
- 2022 E. Whitehouse, W. Gerard, Y. Klimovich, and M. Franco-Salvador. **Programming by Example and Text-to-Code Translation for Conversational Code Generation.** In *arXiv preprint*, 2022.
- 2022 T. Muller, G. Pérez-Torró, and M. Franco-Salvador. **Few-Shot Learning with Siamese Networks and Label Tuning.** In *Proc. of the 60th Annual Meeting of the Association for Computational Linguistics - Volume 1: Long Papers (ACL 2022)*, Dublin, Ireland, May 22-27, pp. 853–8545. (CORE A)
- 2022 T. Muller, G. Pérez-Torró, and M. Franco-Salvador. **Active Few-Shot Learning with FASL.** In *Proc. of the 27th International Conference on Natural Language & Information Systems (NLDB 2022)*, Valencia, Spain, June 15-17, pp. 98–110. (CORE C)
- 2022 A. Basile, M. Franco-Salvador, and P. Rosso. **Unsupervised Ranking and Aggregation of Label Descriptions for Zero-Shot Classifiers.** In *Proc. of the 27th International Conference on Natural Language & Information Systems (NLDB 2022)*, Valencia, Spain, June 15-17, pp. 119–126. (CORE C)

- 2022 M. China-Rios, T. Muller, G. de la Peña, F. Rangel, and M. Franco-Salvador. **Zero and Few-shot Learning for Author Profiling.** In *Proc. of the 27th International Conference on Natural Language & Information Systems (NLDB 2022)*, Valencia, Spain, June 15-17, pp. 333–344. (CORE C)
- 2021 C. Cohrdes, S. Yenikent, J. Wu, B. Ghanem, M. Franco-Salvador, and F. Vogelgesang. **Indications of Depressive Symptoms During the COVID-19 Pandemic in Germany: Comparison of National Survey and Twitter Data.** In *JMIR Ment Health* 2021;8(6):e27140, DOI: 10.2196/27140 (Impact Factor: 4.39)
- 2021 A. Basile, G. Pérez-Torró, and M. Franco-Salvador. **Probabilistic Ensembles of Zero- and Few-Shot Learning Models for Emotion Classification.** In *Proc. of the International Conference on Recent Advances in Natural Language Processing (RANLP 2021)*, Bulgaria, September 1-4, pp. 128–137.
- 2021 A. Basile, M. China-Rios, A.S. Uban, T. Muller, L. Rossler, S. Yenikent, B. Chulví, P. Rosso, and M. Franco-Salvador. **UPV-Symanto at eRisk 2021: Mental Health Author Profiling for Early Risk Prediction on the Internet.** In *CLEF 2021 Labs and Workshops, Notebook Papers*. CEUR-WS.org, <http://ceur-ws.org/Vol-2936/paper-75.pdf>.
- 2021 S. Stajner, S. Yenikent, B. Ghanem, and M. Franco-Salvador. **What Motivates You? Benchmarking Automatic Detection of Basic Needs From Short Posts.** In *Proc. of the Joint Conference of the 59th Annual Meeting of the Association for Computational Linguistics and the 11th International Joint Conference on Natural Language Processing (ACL-IJCNLP 2021)*, August 1th through August 6th, 2021, pp. 803–81. (CORE A)
- 2021 S. Stajner, S. Yenikent, and M. Franco-Salvador. **Five Psycholinguistic Characteristics for Better Interaction with Users.** In *Proceedings of the 8th IEEE International Conference on Behavioural and Social Computing (BESC)*, November 1, 2021.
- 2020 M. China-Rios, M. Franco-Salvador, and Y. Benajiba. **Aspect On: an Interactive Solution for Post-Editing the Aspect Extraction based on Online Learning.** In *Proceedings of The 12th Language Resources and Evaluation Conference (LREC 2020)*, Marseille, France, May 13-16, pp. 4974–4981. (CORE C)
- 2019 A. Basile, M. Franco-Salvador, N. Pawar, S. Štajner, M. China Rios, and Y. Benajiba. **SymantoResearch at SemEval-2019 Task 3: Combined Neural Models for Emotion Classification in Human-Chatbot Conversations.** In *Proceedings of the 13th International Workshop on Semantic Evaluation (SemEval-2019)*, Minneapolis, USA, June 6-7.
- 2018 M. Franco-Salvador, and L. A. Leiva. **Multilingual phrase sampling for text entry evaluations.** In *International Journal of Human-Computer Studies*, vol. 113, pp. 15-31. DOI: 10.1016/j.ijhcs.2018.01.006 (Impact Factor: 2.13)
- 2018 R. M. Giménez-Pérez, M. Franco-Salvador, and P. Rosso. **String Kernels for Polarity Classification: A Study across Different Languages.** In *Proc. of the 23rd International Conference on Natural Language & Information Systems (NLDB 2018)*, Paris, France, 13-15 June, pp. 489–493. (CORE C)

- 2018 M. A. Álvarez Carmona, M. Franco-Salvador, M. Montes-Y-Gómez, P. Rosso, L. Villaseñor-Pineda, and E. Villatoro Tello. **Semantically-informed Distance and Similarity Measures for Paraphrase Plagiarism Identification.** In *Journal of Intelligent and Fuzzy Systems, Special Issue 4th Int. Symposium on Language & Knowledge Engineering*, vol. 34, pp. 2983–2990. DOI: 10.3233/JIFS-169483 (**Impact Factor: 1.26**)
- 2018 S. Štajner, M. Franco-Salvador, P. Rosso, and S. P. Ponzetto. **CATS: A Tool for Customised Alignment of Text Simplification Corpora.** In *Proc. 11th Int. Conf. on Language Resources and Evaluation (LREC 2018)*, Miyazaki, Japan, May 7-12. (**CORE C**)
- 2017 G. Glavaš, M. Franco-Salvador, S. P. Ponzetto, and P. Rosso. **A Resource-light Method for Cross-lingual Semantic Textual Similarity.** In *Knowledge-Based Systems*, vol. 143, pp. 1-9. DOI: 10.1016/j.knosys.2017.11.041 (**Impact Factor: 4.53**)
- 2017 S. Štajner, M. Franco-Salvador, S. P. Ponzetto, P. Rosso, and H. Stuckenschmidt. **Sentence Alignment Methods for Improving Text Simplification Systems.** In *Proc. of the 55th Annual Meeting of the Association for Computational Linguistics (ACL 2017)*, Vancouver, Canada, July 30th through August 4th, 2017, pp. 97–102. (**CORE A**)
- 2017 M. Franco-Salvador. **A Cross-domain and Cross-language Knowledge-based Representation of Text and its Meaning.** In *PhD Thesis, Universitat Politècnica de València*. <http://hdl.handle.net/10251/84285>
- 2017 M. Franco-Salvador, N. Plotnikova, N. Pawar, and Y. Benajiba. **Subword-based Deep Averaging Networks for Author Profiling in Social Media - Notebook for PAN at CLEF 2017.** In *CLEF 2017 Labs and Workshops, Notebook Papers*. CEUR-WS.org, <http://ceur-ws.org/Vol-1866/>
- 2017 M. Franco-Salvador, Greg Kondrak, and P. Rosso. **Bridging the Native Language and Language Variety Identification Tasks.** In *Proc. of the 21st International Conference on Knowledge-Based and Intelligent Information & Engineering Systems (KES 2017)*, Marseille, France, 6-8 September, 2017, pp. 1554–1561. DOI: 10.1016/j.procs.2017.08.06 (**CORE B**)
- 2017 R. M. Giménez-Pérez, M. Franco-Salvador, and P. Rosso. **Single and Cross-domain Polarity Classification using String Kernels.** In *Proc. of the 15th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2017)*, Valencia, Spain, 3-7 April, 2017, pp. 558-563. (**CORE A**)
- 2016 M. Franco-Salvador, P. Gupta, P. Rosso, and R. E. Banchs. **Cross-language Plagiarism Detection Over Continuous-space- and Knowledge Graph-based Representations of Language.** In *Knowledge-Based Systems*, vol. 111, pp. 87–99. DOI: 10.1016/j.knosys.2016.08.004 (**Impact Factor: 4.53**)
- 2016 M. Franco-Salvador, P. Rosso, and M. Montes-y-Gómez. **A Systematic Study of Knowledge Graph Analysis for Cross-language Plagiarism Detection.** In *Information Processing & Management*, vol. 52(4), pp. 550–570. DOI: 10.1016/j.ipm.2015.12.004 (**Impact Factor: 2.39**)

- 2016 F. Rangel, M. Franco-Salvador, and P. Rosso. **A Low Dimensionality Representation for Language Variety Identification.** In *Proc. of the 17th International Conference on Intelligent Text Processing and Computational Linguistics (CICLing 2016)*, Springer, Cham, 2016. pp. 156-169. **(CORE C)**
- 2016 M. Franco-Salvador, S. Kar, T. Solorio, and P. Rosso. **UH-PRHLT at SemEval-2016 Task 3: Combining Lexical and Semantic-based Features for Community Question Answering.** In *Proc. of the 10th International Workshop on Semantic Evaluation, SemEval '16*, San Diego, California. Association for Computational Linguistics.
- 2015 M. Franco-Salvador, F. L. Cruz, J. A. Troyano, and P. Rosso. **Cross-domain Polarity Classification using a Knowledge-enhanced Meta-classifier.** In *Knowledge-Based Systems*, vol. 86, pp. 46–56. DOI: 10.1016/j.knosys.2015.05.020 **(Impact Factor: 4.53)**
- 2015 M. Franco-Salvador, F. Rangel, P. Rosso, M. Taulé, and A. Martí. **Language Variety Identification using Distributed Representations of Words and Documents.** In *6th International Conference of CLEF on Experimental IR meets Multilinguality, Multimodality, and Interaction (CLEF 2015)*, Springer-Verlag, LNCS(9283), pp. 28–40.
- 2015 M. Franco-Salvador, I. Bensalem, E. Flores, P. Gupta, and P. Rosso. **PAN 2015 Shared Task on Plagiarism Detection: Evaluation of Corpora for Text Alignment.** In *CLEF 2015 Labs and Workshops, Notebook Papers*. CEUR-WS.org, <http://ceur-ws.org/Vol-1391/>
- 2015 M. Franco-Salvador, P. Rosso, and F. Rangel. **Distributed Representations of Words and Documents for Discriminating Similar Languages.** In *Proc. of the RANLP Joint Workshop on Language Technology for Closely Related Languages, Varieties and Dialects (LT4VarDial)*.
- 2014 M. Franco-Salvador, P. Rosso, and R. Navigli. **A Knowledge-based Representation for Cross-Language Document Retrieval and Categorization.** In *Proc. of the 14th Conference of the European Chapter of the Association for Computational Linguistics (EACL 2014)*, Gothenburg, Sweden, 26-30 April, 2014, pp. 414–423. **(CORE A)**
- 2014 M. Franco-Salvador, P. Gupta and P. Rosso. **Knowledge Graphs as Context Models: Improving the Detection of Cross-Language Plagiarism with Paraphrasing.** In *Revised Papers PROMISE Winter School 2013*, Springer-Verlag, LNCS(8173), pp. 227–236.
- 2013 M. Franco-Salvador, P. Gupta and P. Rosso. **Graph-Based Similarity Analysis: A New Approach to Cross-Language Plagiarism Detection.** In *Sociedad Española de Procesamiento del Lenguaje Natural (SEPLN)*, num. 50, pp. 21–28.
- 2013 M. Franco-Salvador, P. Gupta and P. Rosso. **Cross-Language Plagiarism Detection using a Multilingual Semantic Network.** In *Proc. of the 35th European Conference on Information Retrieval (ECIR 2013)*, Moscow, Russia, 24-27 March, 2013, Springer-Verlag, LNCS(7814), pp. 710–713. **(CORE B)**
- 2012 M. Franco-Salvador, P. Gupta and P. Rosso. **Cross-language Plagiarism Detection Using BabelNet’s Statistical Dictionary.** In *Computación y Sistemas, Revista Iberoamericana de Computación*, ISSN 1405-5546, vol. 16, num. 4, pp. 383–390.