TWAS Rafael Bello list of publications

The most representative publications:

### Knowledge representation form in mechanical engineering, **KNOWLEDGE-BASED SYSTEMS, VOL. 7, No. 3, pp. 154-160. 1994.**

1. Model and its different applications to case-based reasoning, **KNOWLEDGE-BASED SYSTEMS, Vol. 9, No. 7, pp. 465-473, 1996.**

### Making Decision in Case-Based Systems using Probabilities and Rough Sets. **KNOWLEDGE-BASED SYSTEMS, VOL. 16, No. 4, pp. 205-213.** June/2003.

1. Using ACO and Rough Set Theory to Feature Selection. **WSEAS Transactions on Information Science and Applications,** Issue 5, Vol. 2, May 2005, pp. 512-517.
2. Two new feature selection algorithms with Rough set theory. **In IFIP International Federation for Information Processing, Volume 217,** Artificial Intelligence in Theory and Practice, Eds. M. Bramer, (Boston: Springer), pp. 209-216. 2006.
3. Improving the k-NN method: Rough set in edit training set. **In IFIP International Federation for Information Processing, Volume 218**, Professional Practice in Artificial Intelligence, Eds. J. Debenham, (Boston: Springer), pp. 21-30. 2006.
4. Two Step Swarm Intelligence to Solve the Feature Selection Problem. **Journal of Universe Computer Science**, vol 14, issue 15, pp. 2582-2596. 2008.
5. Analysis of the efficacy of a Two-Step methodology for ant colony optimization: Case of study with TSP and QAP. **Expert Systems with Applications 37**, no. 7, pp. 5443-5453. 2010. ISSN 0957-4174.
6. A method to built similarity relations into extended Rough set theory. Proceedings of the 10th International Conference on Intelligent Systems Design and Applications (ISDA2010), Cairo, Egipto, Nov. 19-Dec. 1, 2010 **IEEE, ISBN: 978-1-4244-8135-4,** pp. 1314-1319. 2010.
7. Variable mesh optimization for continuous optimization problems. **Soft Computing**, vol. 16, no. 3, pp. 511-525. DOI 10.1007/s00500-011-0753-9. Springer-Verlag. 2012.
8. Rough sets in the Soft Computing environment, **Information Sciences** 212, pp. 1-14, <http://dx.doi.org/10.1016/j.ins.2012.04.041>. 2012.
9. Optimising real parameters using the information of a mesh of solutions: VMO algorithm. Proceedings of **IEEE Congress on Evolutionary Computation**, pp. 1-7. IEEE Computer Society. ISBN 978-1-4673-1510-4. Brisbane, Australia, June 10-15. 2012.
10. SMOTE-RSB \*: a hybrid preprocessing approach based on oversampling and undersampling for high imbalanced data-sets using SMOTE and rough sets theory. [**Knowledge and Information Systems**](https://mail.uclv.edu.cu/owa/redir.aspx?C=4d04b9c713e14b9e9202bf6eab7ff515&URL=http%3a%2f%2flink.springer.com%2fjournal%2f10115)**,** Volume 33, [Issue 2](https://mail.uclv.edu.cu/owa/redir.aspx?C=4d04b9c713e14b9e9202bf6eab7ff515&URL=http%3a%2f%2flink.springer.com%2fjournal%2f10115%2f33%2f2%2fpage%2f1), pp 245-265. November 2012.
11. Two-steps learning of Fuzzy Cognitive Maps for prediction and knowledge discovering on the HIV-1 drug resistance. **Expert Systems with Applications**. DOI: [http://dx.doi.org/10.1016/j.eswa.2013.08.012](https://mail.uclv.edu.cu/owa/redir.aspx?C=cd7a4cf7e4f943b38eeb27046d2ff61a&URL=http%3a%2f%2fdx.doi.org%2f10.1016%2fj.eswa.2013.08.012) (in press). ISSN: 0957-4174. 2013.
12. Donis-Díaz, C.A.; Muro, A.G.; Bello-Pérez, R; Morales, E.V.. A hybrid model of genetic algorithm with local search to discover linguistic data summaries from creep data. **Expert Systems with Applications** vol. 41, issue 4, pp. 2035–2042. 2014.
13. Clustering search and Variable Mesh Algorithms for continuous optimization. **Expert Systems with Applications**, vol. 42, no. 2, pp. 789-795, DOI: 10.1016/j.eswa.2014.08.040. 2015.
14. IFROWANN: Imbalanced Fuzzy-Rough Ordered Weighted Average Nearest Neighbor Classification. **IEEE Transactions on Fuzzy Systems**, vol. 23, issue 5, pp. 1622-1637. 2015.
15. Fuzzy-rough imbalanced learning for the diagnosis of High Voltage Circuit Breaker maintenance: The SMOTE-FRST-2T algorithm. **Engineering Applications of Artificial Intelligence** 48, pp. 134–139. 2016.
16. Rough Cognitive Networks. **Knowledge-Based Systems** 91, pp. 46–61. 2016.
17. A linguistic fusion approach for heterogeneous Environmental Impact Significance Assessment. **Applied Mathematical Modelling**, 40, pp. 1402–1417. 2016.

 <http://dx.doi.org/10.1016/j.apm.2015.07.016>. 2016.

1. Prototypes construction from partial rankings to characterize the attractiveness of companies in Belgium, **Applied Soft Computing,** 42. pp. 276–289.. 2016. <http://dx.doi.org/10.1016/j.asoc.2016.01.053>.
2. Personnel Selection in a Competitive Environment. Computación y Sistemas, Vol. 20 No. 2, pp. 195-204. 2016. doi: 10.13053/CyS-20-2-2315.
3. On the convergence of sigmoid Fuzzy Cognitive Maps**. Information Sciences**, pp. 349-350. pp. 154–171. 2016.
4. Learning and Convergence of Fuzzy Cognitive Maps Used in Pattern Recognition. **Neural Processing Letters,** 43. pp. 1–14. 2016.
5. Multiobjective Variable Mesh Optimization. **Annals of Operations Research**, Vol. 5, no 2, pp. 1-25. 2016.
6. Weighted aggregation of partial rankings using Ant Colony Optimization. **Neurocomputing**, vol. 250, no. 9, pp. 109-120. 2017.
7. [Rough cognitive ensembles](http://www.sciencedirect.com/science/article/pii/S0888613X17302116)**. International Journal of Approximate Reasoning,** Volume 85, June 2017, pp. 79-96**.** doi:10.1016/j.ijar.2017.03.011. 2017.
8. Learning and Convergence of Fuzzy Cognitive Maps Used in Pattern Recognition. **Neural Process Letter,** vol. 45, Issue 2, pp. 431–444. DOI 10.1007/s11063-016-9534-x. 2017.
9. Nápoles Ruiz, G.; Mosquera Garcia, C.; Falcon Martinez, R.; Grau Garcia, I.; Vanhoof, K.; Bello Perez, R..[Fuzzy-Rough Cognitive Networks](http://www.sciencedirect.com/science/article/pii/S0893608017301971). **Neural Networks**, Volume 97, January, pp. 19-27. 2018.
10. Yaima Filiberto, Rafael Bello, Ann Nowe. A New Method For Personnel Selection Based On Ranking Aggregation Using A Reinforcement Learning Approach. Computación y Sistemas, Vol. 22, No. 2, pp. 537–546. doi: 10.13053/CyS-22-2-2353. 2018.
11. J Rojas-Delgado, R Trujillo-Rasúa, R Bello. A continuation approach for training Artificial Neural Networks with meta-heuristics. **Pattern Recognition Letters** 125, pp. 373-380. 2019.
12. M Bello, G Nápoles, K Vanhoof, R Bello. Methods to Edit Multi-label Training Sets Using Rough Sets Theory. **Lectures Notes on Artificial Intelligence**, no. 11496 , pp. 369-380. 2019.
13. Bello, M.; Nápoles, G.; Bello Perez, R.; Vanhoof, K.. Prototypes Generation from Multi-label Datasets Based on Granular Computing. **Lectures Notes on Computer Sciences**. Año 2019, Vol. 11896, Nº. -1. Suiza. pp. 142-151. ISSN: 0302-9743. Disponible URRL en: <https://doi.org/10.1007/978-3-030-33904-3>. 2019.
14. Bello Pérez, R.; Felix, G.; Nápoles, G.; Falcon, R.; Froelich, W..A review on methods and software for fuzzy cognitive maps. **Artificial Intelligence Review.** Año 2019, Vol. 52, Nº. 1. Cham, Suiza. pp. 1707-1737. ISSN: 0269-2821. 2019. URRL en:https://doi.org/10.1007/s10462-017-9575-1.
15. Bello García, M.; Nápoles, G.; Sánchez Alba, R.; Bello Pérez, R.; Vanhoof, K..Deep neural network to extract high-level features and labels in multi-label classification problems. **Neurocomputing.** Año 1989, Vol. 413, Nº. -1. Países Bajos, Países Bajos. pp. 259-270. ISSN: 0925-2312. 2020. URRL en:https://doi.org/10.1016/j.neucom.2020.06.117.
16. Concepción Pérez, L.; Nápoles, G.; Falcón, R.; Vanhoof, K.; Bello Pérez, R..Unveiling the Dynamic Behavior of Fuzzy Cognitive Maps. **IEEE Transactions on Fuzzy Systems.** Año 1989, Vol. -1, Nº. -1. Estados Unidos, Estados Unidos. pp. 0-1. ISSN: 1941-0034. 2020. URRL en:https://ieeexplore.ieee.org/document/8998575.
17. Bello Pérez, R.; Pérez Pupo, I.; Piñero Pérez, P.; García Vacacela, R.; Alvarado Acuña, L..Discovering Fails in Software Projects Planning Based on Linguistic Summaries. **Lecture Notes in Computer Science.** Año 2020, Vol. 12179, Nº. 1. Cham, Suiza. pp. 365-375. ISSN: 0302-9743. 2020. URRL en:https://doi.org/10.1007/978-3-030-52705-1\_27.
18. Bello Pérez, R.; Grass Boada, D.; Pérez Suárez, A.; Rosete Suarez, A.. Overlapping Community Detection Using Multi-objective Approach and Rough Clustering. **Lecture Notes in Computer Science.** Año 2020, Vol. 12179, Nº. 1. Cham, Suiza. pp. 416-431. ISSN: 0302-9743. 2020. URRL en:https://doi.org/10.1007/978-3-030-52705-1\_31.
19. Bello Pérez, R.; Pérez Pupo, I.; Piñero Pérez, P.; Acuña, L.; García Vacacela, R..Linguistic Summaries Generation with Hybridization Method Based on Rough and Fuzzy Sets. **Lecture Notes in Computer Science.** Año 2020, Vol. 12179, Nº. 1. Cham, Suiza. pp. 385-397. ISSN: 0302-9743. 2020. URRL en:https://doi.org/10.1007/978-3-030-52705-1\_29.
20. Bello, M., Nápoles, G., Vanhoof, K. and Bello, R.. On the generation of multi-label prototypes. **Intelligent Data Analysis**, 24(S1), pp.167-183. 2020.
21. Bello Pérez, R.; Coello, L.; Filiberto Cabrera, Y.; Frias, M.; Falcon, R.. IRBASIRB Rule Induction from Similarity Relations a Bayesian Approach (pp.24-34). En **Applied Computer Sciences in Engineering**. Springer, Cham, Suiza / 2020. ISBN:978-3-030-61833-9. 2020. URL:<https://doi.org/10.1007/978-3-030-61834-6>.
22. Bello García, M.; Nápoles, G.; Vanhoof, K.; Bello Pérez, R. (2021). Data Quality Measures based on Granular Computing for Multi-label Classification. **Information Sciences**. Año 1999, Vol. 560, Nº. -1. NEW YORK, Estados Unidos. pp. 51-67. ISSN: 0020-0255. Disponible URRL en: https://www.sciencedirect.com/science/article/abs/pii/S0020025521000542?via%3Dihub.
23. Bello García, M.; Aguilera, Y.; Nápoles, G.; García Lorenzo, M.; Bello Pérez, R.; Vanhoof, K. (2021). Layer-Wise Relevance Propagation in Multi-label Neural Networks to Identify COVID-19 Associated Coinfections. **Lecture Notes in Computer Science**, Vol. 13055, Nº. -1. Alemania, Alemania. pp. 3-12. ISSN: 0302-9743. Disponible URRL en: <https://link.springer.com/chapter/10.1007/978-3-030-89691-1_1>.
24. Laidy de Armas, Miguel Medina, Raul Monroy, Danilo Valdes, Carlos Morell, Rafael Bello. Dwell Time Estimation of Import Containers as an Ordinal Regression Problem. **Applied Sciences**, vol. 11, issue 20, 9380. 2021. <https://doi.org/10.3390/app11209380>
25. Yanela Rodríguez Alvarez, María Matilde García Lorenzo, Yailé Caballero Mota, Yaima Filiberto Cabrera, Isabel M. García Hilarión, Daniela Machado Montes de Oca, Rafael Bello Pérez. Fuzzy prototype selection-based classifiers for imbalanced data. Case study, **Pattern Recognition Letters**, vol 163, pp. 183-190. 2022. ISSN 0167-8655, [https://doi.org/10.1016/j.patrec.2022.07.003.(https://www.sciencedirect.com/science/article/pii/S0167865522002148)](https://doi.org/10.1016/j.patrec.2022.07.003.%28https%3A//www.sciencedirect.com/science/article/pii/S0167865522002148%29).
26. M. Bello, G. Nápoles, K. Vanhoof, M. M. García and R. Bello. Explanation of Multi-Label Neural Networks with Layer-Wise Relevance Propagation. 2022. **Proc. of International Joint Conference on Neural Networks** (IJCNN), 2022, pp. 01-10, doi: 10.1109/IJCNN55064.2022.9892239. <https://ieeexplore.ieee.org/document/9892239>.
27. Marilyn Bello, Gonzalo Nápoles, Leonardo Concepción, Rafael Bello, Pablo Mesejo, Óscar Cordón. REPROT: Explaining the predictions of complex deep learning architectures for object detection through reducts of an image. **Information Sciences 654** (2024) 119851. <https://doi.org/10.1016/j.ins.2023.119851>
28. Yaima Filiberto, Mabel Frías, and Rafael Bello Pérez. Extension of the Similarity Quality Measure for Multi-target Prediction Problem. **Studies in Computational Intelligence**. Volume 1195, pp. 385-396. 2025.