Francisco Herrera

List of Publications by Citations

802 papers	63,072 citations	123 h-index	233 g-index
851 ext. papers	75,903 ext. citations	5.3 avg, IF	8.48 L-index

#	Paper	IF	Citations
802	A practical tutorial on the use of nonparametric statistical tests as a methodology for comparing evolutionary and swarm intelligence algorithms. *Swarm and Evolutionary Computation*, **2011**, 1, 3-18	9.8	2857
801	. *IEEE Transactions on Fuzzy Systems*, **2000**, 8, 746-752	8.3	1577
800	. *IEEE Transactions on Fuzzy Systems*, **2012**, 20, 109-119	8.3	1453
799	A Review on Ensembles for the Class Imbalance Problem: Bagging-, Boosting-, and Hybrid-Based Approaches. *IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews*, **2012**, 42, 463-484		1372
798	Advanced nonparametric tests for multiple comparisons in the design of experiments in computational intelligence and data mining: Experimental analysis of power. *Information Sciences*, **2010**, 180, 2044-2064	7.7	1240
797	A study on the use of non-parametric tests for analyzing the evolutionary algorithms behaviour: a case study on the CEC2005 Special Session on Real Parameter Optimization. *Journal of Heuristics*, **2009**, 15, 617-644	1.9	1223
796	Explainable Artificial Intelligence (XAI): Concepts, taxonomies, opportunities and challenges toward responsible AI. *Information Fusion*, **2020**, 58, 82-115	16.7	1210
795	Linguistic decision analysis: steps for solving decision problems under linguistic information. *Fuzzy Sets and Systems*, **2000**, 115, 67-82	3.7	1088
794	KEEL: a software tool to assess evolutionary algorithms for data mining problems. *Soft Computing*, **2009**, 13, 307-318	3.5	896
793	Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the Association for Information Science and Technology*, **2011**, 62, 1382-1402		846
792	An insight into classification with imbalanced data: Empirical results and current trends on using data intrinsic characteristics. *Information Sciences*, **2013**, 250, 113-141	7.7	829
791	A model of consensus in group decision making under linguistic assessments. *Fuzzy Sets and Systems*, **1996**, 78, 73-87	3.7	818
790	Some issues on consistency of fuzzy preference relations. *European Journal of Operational Research* , **2004**, 154, 98-109	5.6	708
789	Tackling Real-Coded Genetic Algorithms: Operators and Tools for Behavioural Analysis. *Artificial Intelligence Review*, **1998**, 12, 265-319	9.7	703
788	An approach for detecting, quantifying, and visualizing the evolution of a research field: A practical application to the Fuzzy Sets Theory field. *Journal of Informetrics*, **2011**, 5, 146-166	3.1	605
787	A model based on linguistic 2-tuples for dealing with multigranular hierarchical linguistic contexts in multi-expert decision-making. *IEEE Transactions on Systems, Man, and Cybernetics*, **2001**, 31, 227-34		584
786	A fusion approach for managing multi-granularity linguistic term sets in decision making. *Fuzzy Sets and Systems*, **2000**, 114, 43-58	3.7	580

785	Ten years of genetic fuzzy systems: current framework and new trends. *Fuzzy Sets and Systems*, **2004**, 141, 5-31	3.7	574
784	Integrating three representation models in fuzzy multipurpose decision making based on fuzzy preference relations. *Fuzzy Sets and Systems*, **1998**, 97, 33-48	3.7	552
783	Direct approach processes in group decision making using linguistic OWA operators. *Fuzzy Sets and Systems*, **1996**, 79, 175-190	3.7	509
782	Genetic Fuzzy Systems. *Advances in Fuzzy Systems*, **2001**,		499
781	A consensus model for multiperson decision making with different preference structures. *IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans*, **2002**, 32, 394-402		486
780	. *IEEE Transactions on Fuzzy Systems*, **2007**, 15, 863-877	8.3	473
779	h-Index: A review focused in its variants, computation and standardization for different scientific fields. *Journal of Informetrics*, **2009**, 3, 273-289	3.1	469
778	An overview of ensemble methods for binary classifiers in multi-class problems: Experimental study on one-vs-one and one-vs-all schemes. *Pattern Recognition*, **2011**, 44, 1761-1776	7.7	465
777	A study of statistical techniques and performance measures for genetics-based machine learning: accuracy and interpretability. *Soft Computing*, **2009**, 13, 959-977	3.5	460
776	Managing non-homogeneous information in group decision making. *European Journal of Operational Research*, **2005**, 166, 115-132	5.6	452
775	Prototype selection for nearest neighbor classification: taxonomy and empirical study. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, **2012**, 34, 417-35	13.3	449
774	SMOTE for Learning from Imbalanced Data: Progress and Challenges, Marking the 15-year Anniversary. *Journal of Artificial Intelligence Research*,61, 863-905	4	415
773	A sequential selection process in group decision making with a linguistic assessment approach. *Information Sciences*, **1995**, 85, 223-239	7.7	414
772	Group decision-making model with incomplete fuzzy preference relations based on additive consistency. *IEEE Transactions on Systems, Man, and Cybernetics*, **2007**, 37, 176-89		412
771	Genetic fuzzy systems: taxonomy, current research trends and prospects. *Evolutionary Intelligence*, **2008**, 1, 27-46	1.7	409
770	A Fuzzy Linguistic Methodology to Deal With Unbalanced Linguistic Term Sets. *IEEE Transactions on Fuzzy Systems*, **2008**, 16, 354-370	8.3	404
769	Integrating multiplicative preference relations in a multipurpose decision-making model based on fuzzy preference relations. *Fuzzy Sets and Systems*, **2001**, 122, 277-291	3.7	389
768	A group decision making model dealing with comparative linguistic expressions based on hesitant fuzzy linguistic term sets. *Information Sciences*, **2013**, 241, 28-42	7.7	378

767	SciMAT: A new science mapping analysis software tool. *Journal of the Association for Information Science and Technology*, **2012**, 63, 1609-1630		365
766	Computing with words in decision making: foundations, trends and prospects. *Fuzzy Optimization and Decision Making*, **2009**, 8, 337-364	5.1	364
765	A review of microarray datasets and applied feature selection methods. *Information Sciences*, **2014**, 282, 111-135	7.7	352
764	A Survey on the Application of Genetic Programming to Classification. *IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews*, **2010**, 40, 121-144		349
763	Multiperson decision-making based on multiplicative preference relations. *European Journal of Operational Research*, **2001**, 129, 372-385	5.6	339
762	An overview on the 2-tuple linguistic model for computing with words in decision making: Extensions, applications and challenges. *Information Sciences*, **2012**, 207, 1-18	7.7	338
761	Cardinal Consistency of Reciprocal Preference Relations: A Characterization of Multiplicative Transitivity. *IEEE Transactions on Fuzzy Systems*, **2009**, 17, 14-23	8.3	331
760	Hesitant Fuzzy Sets: State of the Art and Future Directions. *International Journal of Intelligent Systems*, **2014**, 29, 495-524	8.4	311
759	Interpretability of linguistic fuzzy rule-based systems: An overview of interpretability measures. *Information Sciences*, **2011**, 181, 4340-4360	7.7	311
758	A unifying view on dataset shift in classification. *Pattern Recognition*, **2012**, 45, 521-530	7.7	299
757	A Consensus Model to Detect and Manage Noncooperative Behaviors in Large-Scale Group Decision Making. *IEEE Transactions on Fuzzy Systems*, **2014**, 22, 516-530	8.3	295
756	A Historical Account of Types of Fuzzy Sets and Their Relationships. *IEEE Transactions on Fuzzy Systems*, **2016**, 24, 179-194	8.3	285
755	. *IEEE Transactions on Knowledge and Data Engineering*, **2013**, 25, 734-750	4.2	284
754	A proposal on reasoning methods in fuzzy rule-based classification systems. *International Journal of Approximate Reasoning*, **1999**, 20, 21-45	3.6	281
753	AN APPROACH FOR COMBINING LINGUISTIC AND NUMERICAL INFORMATION BASED ON THE 2-TUPLE FUZZY LINGUISTIC REPRESENTATION MODEL IN DECISION-MAKING. *International Journal of Uncertainty, Fuzziness and Knowlege-Based Systems*, **2000**, 08, 539-562	0.8	277
752	A rational consensus model in group decision making using linguistic assessments. *Fuzzy Sets and Systems*, **1997**, 88, 31-49	3.7	275
751	Some induced ordered weighted averaging operators and their use for solving group decision-making problems based on fuzzy preference relations. *European Journal of Operational Research*, **2007**, 182, 383-399	5.6	271
750	Data Preprocessing in Data Mining. *Intelligent Systems Reference Library*, **2015**,	0.8	270

749	Aggregation operators for linguistic weighted information. *IEEE Transactions on Systems, Man and Cybernetics, Part A: Systems and Humans*, **1997**, 27, 646-656		270
748	Bio-inspired computation: Where we stand and what's next. *Swarm and Evolutionary Computation*, **2019**, 48, 220-250	9.8	264
747	SMOTE-IPF: Addressing the noisy and borderline examples problem in imbalanced classification by a re-sampling method with filtering. *Information Sciences*, **2015**, 291, 184-203	7.7	259
746	Real-coded memetic algorithms with crossover hill-climbing. *Evolutionary Computation*, **2004**, 12, 273-302	4.3	245
745	Choice functions and mechanisms for linguistic preference relations. *European Journal of Operational Research*, **2000**, 120, 144-161	5.6	245
744	A taxonomy for the crossover operator for real-coded genetic algorithms: An experimental study. *International Journal of Intelligent Systems*, **2003**, 18, 309-338	8.4	244
743	EUSBoost: Enhancing ensembles for highly imbalanced data-sets by evolutionary undersampling. *Pattern Recognition*, **2013**, 46, 3460-3471	7.7	242
742	A web based consensus support system for group decision making problems and incomplete preferences. *Information Sciences*, **2010**, 180, 4477-4495	7.7	241
741	Tuning fuzzy logic controllers by genetic algorithms. *International Journal of Approximate Reasoning* , **1995**, 12, 299-315	3.6	239
740	Personalized individual semantics in computing with words for supporting linguistic group decision making. An application on consensus reaching. *Information Fusion*, **2017**, 33, 29-40	16.7	236
739	Self-labeled techniques for semi-supervised learning: taxonomy, software and empirical study. *Knowledge and Information Systems*, **2015**, 42, 245-284	2.4	236
738	. *IEEE Transactions on Fuzzy Systems*, **2013**, 21, 45-65	8.3	233
737	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*, **2012**, 33, 245-265	2.4	232
736	Evolutionary undersampling for classification with imbalanced datasets: proposals and taxonomy. *Evolutionary Computation*, **2009**, 17, 275-306	4.3	230
735	Group decision making with incomplete fuzzy linguistic preference relations. *International Journal of Intelligent Systems*, **2009**, 24, 201-222	8.4	229
734	Using evolutionary algorithms as instance selection for data reduction in KDD: an experimental study. *IEEE Transactions on Evolutionary Computation*, **2003**, 7, 561-575	15.6	225
733	Global and local real-coded genetic algorithms based on parent-centric crossover operators. *European Journal of Operational Research*, **2008**, 185, 1088-1113	5.6	220
732	A consistency-based procedure to estimate missing pairwise preference values. *International Journal of Intelligent Systems*, **2008**, 23, 155-175	8.4	218

731	Analysing the classification of imbalanced data-sets with multiple classes: Binarization techniques and ad-hoc approaches. *Knowledge-Based Systems*, **2013**, 42, 97-110	7.3	216
730	A taxonomy and an empirical analysis of multiple objective ant colony optimization algorithms for the bi-criteria TSP. *European Journal of Operational Research*, **2007**, 180, 116-148	5.6	206
729	A Fuzzy Association Rule-Based Classification Model for High-Dimensional Problems With Genetic Rule Selection and Lateral Tuning. *IEEE Transactions on Fuzzy Systems*, **2011**, 19, 857-872	8.3	203
728	Computing with Words in Decision support Systems: An overview on Models and Applications. *International Journal of Computational Intelligence Systems*, **2010**, 3, 382-395	3.4	203
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726	Consensus under a fuzzy context: Taxonomy, analysis framework AFRYCA and experimental case of study. *Information Fusion*, **2014**, 20, 252-271	16.7	200
725	A survey on data preprocessing for data stream mining: Current status and future directions. *Neurocomputing*, **2017**, 239, 39-57	5.4	199
724	Learning from Imbalanced Data Sets **2018**,		198
723	A study of the behaviour of linguistic fuzzy rule based classification systems in the framework of imbalanced data-sets. *Fuzzy Sets and Systems*, **2008**, 159, 2378-2398	3.7	196
722	Generating the knowledge base of a fuzzy rule-based system by the genetic learning of the data base. *IEEE Transactions on Fuzzy Systems*, **2001**, 9, 667-674	8.3	194
721	Analysis of preprocessing vs. cost-sensitive learning for imbalanced classification. Open problems on intrinsic data characteristics. *Expert Systems With Applications*, **2012**, 39, 6585-6608	7.8	192
720	Double hierarchy hesitant fuzzy linguistic term set and MULTIMOORA method: A case of study to evaluate the implementation status of haze controlling measures. *Information Fusion*, **2017**, 38, 22-34	16.7	183
719	Managing consensus based on leadership in opinion dynamics. *Information Sciences*, **2017**, 397-398, 187-205	7.7	181
718	Study on the impact of partition-induced dataset shift on k-fold cross-validation. *IEEE Transactions on Neural Networks and Learning Systems*, **2012**, 23, 1304-12	10.3	181
717	Cost-sensitive linguistic fuzzy rule based classification systems under the MapReduce framework for imbalanced big data. *Fuzzy Sets and Systems*, **2015**, 258, 5-38	3.7	179
716	On the use of MapReduce for imbalanced big data using Random Forest. *Information Sciences*, **2014** , 285, 112-137	7.7	179
715	A position and perspective analysis of hesitant fuzzy sets on information fusion in decision making. Towards high quality progress. *Information Fusion*, **2016**, 29, 89-97	16.7	177
714	Probabilistic Linguistic MULTIMOORA: A Multicriteria Decision Making Method Based on the Probabilistic Linguistic Expectation Function and the Improved Borda Rule. *IEEE Transactions on Fuzzy Systems*, **2018**, 26, 3688-3702	8.3	174

713	An overview on subgroup discovery: foundations and applications. *Knowledge and Information Systems*, **2011**, 29, 495-525	2.4	174
712	Gradual distributed real-coded genetic algorithms. *IEEE Transactions on Evolutionary Computation*, **2000**, 4, 43-63	15.6	174
711	Big data preprocessing: methods and prospects. *Big Data Analytics*, **2016**, 1,	2.9	172
710	Minimizing adjusted simple terms in the consensus reaching process with hesitant linguistic assessments in group decision making. *Information Sciences*, **2015**, 297, 95-117	7.7	171
709	A Taxonomy and Experimental Study on Prototype Generation for Nearest Neighbor Classification. *IEEE Transactions on Systems, Man and Cybernetics, Part C: Applications and Reviews*, **2012**, 42, 86-100		171
708	Genetic tuning of fuzzy rule deep structures preserving interpretability and its interaction with fuzzy rule set reduction. *IEEE Transactions on Fuzzy Systems*, **2005**, 13, 13-29	8.3	169
707	Connecting the linguistic hierarchy and the numerical scale for the 2-tuple linguistic model and its use to deal with hesitant unbalanced linguistic information. *Information Sciences*, **2016**, 367-368, 259-278	7.7	165
706	MRPR: A MapReduce solution for prototype reduction in big data classification. *Neurocomputing*, **2015**, 150, 331-345	5.4	159
705	Recent trends in the use of statistical tests for comparing swarm and evolutionary computing algorithms: Practical guidelines and a critical review. *Swarm and Evolutionary Computation*, **2020**, 54, 100665	9.8	159
704	A three-stage evolutionary process for learning descriptive and approximate fuzzy-logic-controller knowledge bases from examples. *International Journal of Approximate Reasoning*, **1997**, 17, 369-407	3.6	159
703	Deep learning in video multi-object tracking: A survey. *Neurocomputing*, **2020**, 381, 61-88	5.4	157
702	kNN-IS: An Iterative Spark-based design of the k-Nearest Neighbors classifier for big data. *Knowledge-Based Systems*, **2017**, 117, 3-15	7.3	156
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699	THE 2-TUPLE LINGUISTIC COMPUTATIONAL MODEL: ADVANTAGES OF ITS LINGUISTIC DESCRIPTION, ACCURACY AND CONSISTENCY. *International Journal of Uncertainty, Fuzziness and Knowlege-Based Systems*, **2001**, 09, 33-48	0.8	151
698	Grouping, Overlap, and Generalized Bientropic Functions for Fuzzy Modeling of Pairwise Comparisons. *IEEE Transactions on Fuzzy Systems*, **2012**, 20, 405-415	8.3	150
697	A memetic algorithm for evolutionary prototype selection: A scaling up approach. *Pattern Recognition*, **2008**, 41, 2693-2709	7.7	141
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695	Evolutionary undersampling boosting for imbalanced classification of breast cancer malignancy. *Applied Soft Computing Journal*, **2016**, 38, 714-726	7.5	138
694	Tutorial on practical tips of the most influential data preprocessing algorithms in data mining. *Knowledge-Based Systems*, **2016**, 98, 1-29	7.3	138
693	A linear programming method for multiple criteria decision making with probabilistic linguistic information. *Information Sciences*, **2017**, 415-416, 341-355	7.7	138
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691	A Multiobjective Evolutionary Approach to Concurrently Learn Rule and Data Bases of Linguistic Fuzzy-Rule-Based Systems. *IEEE Transactions on Fuzzy Systems*, **2009**, 17, 1106-1122	8.3	135
690	Big Data with Cloud Computing: an insight on the computing environment, MapReduce, and programming frameworks. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, **2014**, 4, 380-409	6.9	134
689	Hierarchical fuzzy rule based classification systems with genetic rule selection for imbalanced data-sets. *International Journal of Approximate Reasoning*, **2009**, 50, 561-577	3.6	134
688	On the choice of the best imputation methods for missing values considering three groups of classification methods. *Knowledge and Information Systems*, **2012**, 32, 77-108	2.4	132
687	Memetic algorithms for continuous optimisation based on local search chains. *Evolutionary Computation*, **2010**, 18, 27-63	4.3	131
686	A practical tutorial on autoencoders for nonlinear feature fusion: Taxonomy, models, software and guidelines. *Information Fusion*, **2018**, 44, 78-96	16.7	130
685	Consensus reaching process for large-scale group decision making with double hierarchy hesitant fuzzy linguistic preference relations. *Knowledge-Based Systems*, **2018**, 157, 20-33	7.3	130
684	Learning the membership function contexts for mining fuzzy association rules by using genetic algorithms. *Fuzzy Sets and Systems*, **2009**, 160, 905-921	3.7	129
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682	Editorial scalability of evolutionary algorithms and other metaheuristics for large-scale continuous optimization problems. *Soft Computing*, **2011**, 15, 2085-2087	3.5	126
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680	Addressing imbalance in multilabel classification: Measures and random resampling algorithms. *Neurocomputing*, **2015**, 163, 3-16	5.4	125
679	KEEL 3.0: An Open Source Software for Multi-Stage Analysis in Data Mining. *International Journal of Computational Intelligence Systems*, **2017**, 10, 1238	3.4	122
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674	Induced ordered weighted geometric operators and their use in the aggregation of multiplicative preference relations. *International Journal of Intelligent Systems*, **2004**, 19, 233-255	8.4	117
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672	Cognitive Computing: Architecture, Technologies and Intelligent Applications. *IEEE Access*, **2018**, 6, 19774-19783	3.5	114
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670	Distinguishing between facts and opinions for sentiment analysis: Survey and challenges. *Information Fusion*, **2018**, 44, 65-77	16.7	113
669	Addressing data complexity for imbalanced data sets: analysis of SMOTE-based oversampling and evolutionary undersampling. *Soft Computing*, **2011**, 15, 1909-1936	3.5	109
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667	Personalized individual semantics based on consistency in hesitant linguistic group decision making with comparative linguistic expressions. *Knowledge-Based Systems*, **2018**, 145, 156-165	7.3	108
666	Fuzzy connectives based crossover operators to model genetic algorithms population diversity. *Fuzzy Sets and Systems*, **1997**, 92, 21-30	3.7	108
665	Genetics-Based Machine Learning for Rule Induction: State of the Art, Taxonomy, and Comparative Study. *IEEE Transactions on Evolutionary Computation*, **2010**, 14, 913-941	15.6	106
664	. *IEEE Transactions on Fuzzy Systems*, **2000**, 8, 335-344	8.3	106
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661	A study of the origin and uses of the ordered weighted geometric operator in multicriteria decision making. *International Journal of Intelligent Systems*, **2003**, 18, 689-707	8.4	104
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655	Evolutionary-based selection of generalized instances for imbalanced classification. *Knowledge-Based Systems*, **2012**, 25, 3-12	7.3	99
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