# Mauro Birattari

List of Publications by Year
in descending order



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|---|---|---|---|
| 141 papers | 11,464 citations | 109321 35 h-index | 30922 102 g-index |
| 158 all docs | 158 docs citations | 158 times ranked | 7445 citing authors |

| # | Article | IF | Citations |
|---|---|---|---|
| 1 | Ant colony optimization. IEEE Computational Intelligence Magazine, 2006, 1, 28-39. | 3.2 | 3,284 |
| 2 | Swarm robotics: a review from the swarm engineering perspective. Swarm Intelligence, 2013, 7, 1-41. | 2.2 | 1,207 |
| 3 | The irace package: Iterated racing for automatic algorithm configuration. Operations Research Perspectives, 2016, 3, 43-58. | 2.1 | 918 |
| 4 | Ant Colony Optimization. IEEE Computational Intelligence Magazine, 2006, 1, 28-39. | 3.2 | 906 |
| 5 | ARGoS: a modular, parallel, multi-engine simulator for multi-robot systems. Swarm Intelligence, 2012, 6, 271-295. | 2.2 | 399 |
| 6 | Frankenstein's PSO: A Composite Particle Swarm Optimization Algorithm. IEEE Transactions on Evolutionary Computation, 2009, 13, 1120-1132. | 10.0 | 297 |
| 7 | Swarmanoid: A Novel Concept for the Study of Heterogeneous Robotic Swarms. IEEE Robotics and Automation Magazine, 2013, 20, 60-71. | 2.0 | 254 |
| 8 | Lazy learning for local modelling and control design. International Journal of Control, 1999, 72, 643-658. | 1.9 | 226 |
| 9 | F-Race and Iterated F-Race: An Overview. , 2010, , 311-336. | | 207 |
| 10 | Model-Based Search for Combinatorial Optimization: A Critical Survey. Annals of Operations Research, 2004, 131, 373-395. | 4.1 | 193 |
| 11 | Tuning Metaheuristics. Studies in Computational Intelligence, 2009, , . | 0.9 | 143 |
| 12 | AutoMoDe: A novel approach to the automatic design of control software for robot swarms. Swarm Intelligence, 2014, 8, 89-112. | 2.2 | 122 |
| 13 | Swarm robotics. Scholarpedia Journal, 2014, 9, 1463. | 0.3 | 115 |
| 14 | Improvement Strategies for the F-Race Algorithm: Sampling Design and Iterative Refinement. , 2007, , 108-122. | | 114 |
| 15 | Swarm intelligence. Scholarpedia Journal, 2007, 2, 1462. | 0.3 | 112 |
| 16 | An effective hybrid algorithm for university course timetabling. Journal of Scheduling, 2006, 9, 403-432. | 1.9 | 110 |
| 17 | Hybrid Metaheuristics for the Vehicle Routing Problem with Stochastic Demands. Mathematical Modelling and Algorithms, 2006, 5, 91-110. | 0.5 | 103 |
| 18 | Majority-rule opinion dynamics with differential latency: a mechanism for self-organized collective decision-making. Swarm Intelligence, 2011, 5, 305-327. | 2.2 | 89 |

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|---|---|---|---|
| 19 | Self-organized task allocation to sequentially interdependent tasks in swarm robotics. Autonomous Agents and Multi-Agent Systems, 2014, 28, 101-125. | 2.1 | 82 |
| 20 | On the Invariance of Ant Colony Optimization. IEEE Transactions on Evolutionary Computation, 2007, 11, 732-742. | 10.0 | 77 |
| 21 | Fault detection in autonomous robots based on fault injection andÂlearning. Autonomous Robots, 2008, 24, 49-67. | 4.8 | 77 |
| 22 | A Comparison of the Performance of Different Metaheuristics on the Timetabling Problem. Lecture Notes in Computer Science, 2003, , 329-351. | 1.3 | 71 |
| 23 | The local paradigm for modeling and control: from neuro-fuzzy to lazy learning. Fuzzy Sets and Systems, 2001, 121, 59-72. | 2.7 | 70 |
| 24 | An analysis of communication policies for homogeneous multi-colony ACO algorithms. Information Sciences, 2010, 180, 2390-2404. | 6.9 | 70 |
| 25 | AutoMoDe-Chocolate: automatic design of control software for robot swarms. Swarm Intelligence, 2015, 9, 125-152. | 2.2 | 69 |
| 26 | Automatic Design of Robot Swarms: Achievements and Challenges. Frontiers in Robotics and AI, 2016, 3, . | 3.2 | 66 |
| 27 | Parameter Adaptation in Ant Colony Optimization. , 2011, , 191-215. | | 64 |
| 28 | Autonomous task sequencing in a robot swarm. Science Robotics, 2018, 3, . | 17.6 | 59 |
| 29 | Continuous optimization algorithms for tuning real and integer parameters of swarm intelligence algorithms. Swarm Intelligence, 2012, 6, 49-75. | 2.2 | 56 |
| 30 | A self-adaptive communication strategy for flocking in stationary and non-stationary environments. Natural Computing, 2014, 13, 225-245. | 3.0 | 54 |
| 31 | Estimation-based ant colony optimization and local search for the probabilistic traveling salesman problem. Swarm Intelligence, 2009, 3, 223-242. | 2.2 | 53 |
| 32 | Task partitioning in swarms of robots: an adaptive method for strategy selection. Swarm Intelligence, 2011, 5, 283-304. | 2.2 | 49 |
| 33 | Automatic Off-Line Design of Robot Swarms: A Manifesto. Frontiers in Robotics and AI, 2019, 6, 59. | 3.2 | 49 |
| 34 | Property-Driven Design for Robot Swarms. ACM Transactions on Autonomous and Adaptive Systems, 2015, 9, 1-28. | 0.8 | 48 |
| 35 | The Role of Learning Methods in the Dynamic Assessment of Power Components Loading Capability. IEEE Transactions on Industrial Electronics, 2005, 52, 280-290. | 7.9 | 44 |
| 36 | Estimation-Based Local Search for Stochastic Combinatorial Optimization Using Delta Evaluations: A Case Study on the Probabilistic Traveling Salesman Problem. INFORMS Journal on Computing, 2008, 20, 644-658. | 1.7 | 37 |

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| 37 | Toward the Formal Foundation of Ant Programming. Lecture Notes in Computer Science, 2002, , 188-201. | 1.3 | 37 |
| 38 | A critical analysis of parameter adaptation in ant colony optimization. Swarm Intelligence, 2012, 6, 23-48. | 2.2 | 36 |
| 39 | On the Design of Boolean Network Robots. Lecture Notes in Computer Science, 2011, , 43-52. | 1.3 | 35 |
| 40 | Analysing an Evolved Robotic Behaviour Using a Biological Model of Collegial Decision Making. Lecture Notes in Computer Science, 2012, , 381-390. | 1.3 | 34 |
| 41 | How to assess and report the performance of a stochastic algorithm on a benchmark problem: mean or best result on a number of runs?. Optimization Letters, 2007, 1, 309-311. | 1.6 | 33 |
| 42 | Estimation-based metaheuristics for the probabilistic traveling salesman problem. Computers and Operations Research, 2010, 37, 1939-1951. | 4.0 | 32 |
| 43 | On the use of Bio-PEPA for modelling and analysing collective behaviours in swarm robotics. Swarm Intelligence, 2013, 7, 201-228. | 2.2 | 32 |
| 44 | Autonomous task partitioning in robot foraging: an approach based on cost estimation. Adaptive Behavior, 2013, 21, 118-136. | 1.9 | 32 |
| 45 | Behavior Trees as a Control Architecture in the Automatic Modular Design of Robot Swarms. Lecture Notes in Computer Science, 2018, , 30-43. | 1.3 | 31 |
| 46 | Swarm SLAM: Challenges and Perspectives. Frontiers in Robotics and AI, 2021, 8, 618268. | 3.2 | 31 |
| 47 | Self-Organizing and Scalable Shape Formation for a Swarm of Pico Satellites. , 2008, , . | | 30 |
| 48 | Negotiation of Goal Direction for Cooperative Transport. Lecture Notes in Computer Science, 2006, , 191-202. | 1.3 | 29 |
| 49 | Adaptive sample size and importance sampling in estimation-based local search for the probabilistic traveling salesman problem. European Journal of Operational Research, 2009, 199, 98-110. | 5.7 | 29 |
| 50 | Simulation-only experiments to mimic the effects of the reality gap in the automatic design of robot swarms. Swarm Intelligence, 2020, 14, 1-24. | 2.2 | 29 |
| 51 | The TAM: abstracting complex tasks in swarm robotics research. Swarm Intelligence, 2015, 9, 1-22. | 2.2 | 28 |
| 52 | Metaheuristics for the Vehicle Routing Problem with Stochastic Demands. Lecture Notes in Computer Science, 2004, , 450-460. | 1.3 | 27 |
| 53 | Flocking in Stationary and Non-stationary Environments: A Novel Communication Strategy for Heading Alignment. , 2010, , 331-340. | | 26 |
| 54 | Dynamical regimes and learning properties of evolved Boolean networks. Neurocomputing, 2013, 99, 111-123. | 5.9 | 25 |

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| 55 | Random Walk Exploration for Swarm Mapping. Lecture Notes in Computer Science, 2019, , 211-222. | 1.3 | 25 |
| 56 | Disentangling automatic and semi-automatic approaches to the optimization-based design of control software for robot swarms. Nature Machine Intelligence, 2020, 2, 494-499. | 16.0 | 24 |
| 57 | Towards a theory of practice inÂmetaheuristics design: A machine learning perspective. RAIRO - Theoretical Informatics and Applications, 2006, 40, 353-369. | 0.5 | 23 |
| 58 | Estimation-based metaheuristics for the single vehicle routing problem with stochastic demands and customers. Computational Optimization and Applications, 2015, 61, 463-487. | 1.6 | 23 |
| 59 | Task Partitioning in a Robot Swarm: Object Retrieval as a Sequence of Subtasks with Direct Object Transfer. Artificial Life, 2014, 20, 291-317. | 1.3 | 22 |
| 60 | Augmented reality for robots: Virtual sensing technology applied to a swarm of e-pucks. , 2015, , . | | 21 |
| 61 | Recursive lazy learning for modeling and control. Lecture Notes in Computer Science, 1998, , 292-303. | 1.3 | 20 |
| 62 | Empirical assessment and comparison of neuro-evolutionary methods for the automatic off-line design of robot swarms. Nature Communications, 2021, 12, 4345. | 12.8 | 20 |
| 63 | Towards a Formal Verification Methodology for Collective Robotic Systems. Lecture Notes in Computer Science, 2012, , 54-70. | 1.3 | 20 |
| 64 | Socially-Mediated Negotiation for Obstacle Avoidance in Collective Transport. Springer Tracts in Advanced Robotics, 2013, , 571-583. | 0.4 | 18 |
| 65 | Automatic Design of Communication-Based Behaviors for Robot Swarms. Lecture Notes in Computer Science, 2018, , 16-29. | 1.3 | 18 |
| 66 | A Comparison of Particle Swarm Optimization Algorithms Based on Run-Length Distributions. Lecture Notes in Computer Science, 2006, , 1-12. | 1.3 | 18 |
| 67 | Costs and benefits of behavioral specialization. Robotics and Autonomous Systems, 2012, 60, 1408-1420. | 5.1 | 17 |
| 68 | Task Partitioning in Swarms of Robots: Reducing Performance Losses Due to Interference at Shared Resources. Lecture Notes in Electrical Engineering, 2011, , 217-228. | 0.4 | 17 |
| 69 | Data-driven techniques for direct adaptive control: the lazy and the fuzzy approaches. Fuzzy Sets and Systems, 2002, 128, 3-14. | 2.7 | 16 |
| 70 | Task partitioning in a robot swarm: a study on the effect of communication. Swarm Intelligence, 2013, 7, 173-199. | 2.2 | 16 |
| 71 | Reactive Stochastic Local Search Algorithms for the Genomic Median Problem. Lecture Notes in Computer Science, 2008, , 266-276. | 1.3 | 16 |
| 72 | Updating ACO Pheromones Using Stochastic Gradient Ascent and Cross-Entropy Methods. Lecture Notes in Computer Science, 2002, , 21-30. | 1.3 | 15 |

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| 73 | The ACO/F-Race Algorithm for Combinatorial Optimization Under Uncertainty. , 2007, , 189-203. | | 14 |
| 74 | Phormica: Photochromic Pheromone Release and Detection System for Stigmergic Coordination in Robot Swarms. Frontiers in Robotics and AI, 2020, 7, 591402. | 3.2 | 14 |
| 75 | An analysis of post-selection in automatic configuration. , 2013, , . | | 13 |
| 76 | Analysis of long-term swarm performance based on short-term experiments. Soft Computing, 2016, 20, 37-48. | 3.6 | 13 |
| 77 | Automatic Design of Collective Behaviors for Robots that Can Display and Perceive Colors. Applied Sciences (Switzerland), 2020, 10, 4654. | 2.5 | 13 |
| 78 | Multi-armed Bandit Formulation of the Task Partitioning Problem in Swarm Robotics. Lecture Notes in Computer Science, 2012, , 109-120. | 1.3 | 13 |
| 79 | A Critique of the Constitutive Role of Truthlikeness in the Similarity Approach. Erkenntnis, 2010, 72, 379-386. | 0.9 | 12 |
| 80 | Concurrent design of control software and configuration of hardware for robot swarms under economic constraints. PeerJ Computer Science, 2019, 5, e221. | 4.5 | 12 |
| 81 | Automatic modular design of robot swarms using behavior trees as a control architecture. PeerJ Computer Science, 2020, 6, e314. | 4.5 | 12 |
| 82 | “Can ants inspire robots?” Self-organized decision making in robotic swarms. , 2012, , . | | 11 |
| 83 | Modular automatic design of collective behaviors for robots endowed with local communication capabilities. PeerJ Computer Science, 2020, 6, e291. | 4.5 | 11 |
| 84 | Observing the Effects of Overdesign in the Automatic Design of Control Software for Robot Swarms. Lecture Notes in Computer Science, 2016, , 149-160. | 1.3 | 10 |
| 85 | On Mimicking the Effects of the Reality Gap with Simulation-Only Experiments. Lecture Notes in Computer Science, 2018, , 109-122. | 1.3 | 10 |
| 86 | AutoMoDe: A Modular Approach to the Automatic Off-Line Design and Fine-Tuning of Control Software for Robot Swarms. Natural Computing Series, 2021, , 73-90. | 2.2 | 10 |
| 87 | Majority Rule with Differential Latency: An Absorbing Markov Chain to Model Consensus. Springer Proceedings in Complexity, 2013, , 651-658. | 0.3 | 10 |
| 88 | Automatic Synthesis of Fault Detection Modules for Mobile Robots. , 2007, , . | | 9 |
| 89 | An analysis of parameter adaptation in reactive tabu search. International Transactions in Operational Research, 2014, 21, 127-152. | 2.7 | 9 |
| 90 | Designing control software for robot swarms. , 2018, , . | | 9 |

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| 91 | Self-organized Task Partitioning in a Swarm of Robots. Lecture Notes in Computer Science, 2010, , 287-298. | 1.3 | 9 |
| 92 | A multi-objective ant colony optimization method applied to switch engine scheduling in railroad yards. Pesquisa Operacional, 2010, 30, 486-514. | 0.4 | 8 |
| 93 | A Swarm Robotics Approach to Task Allocation under Soft Deadlines and Negligible Switching Costs. Lecture Notes in Computer Science, 2014, , 270-279. | 1.3 | 8 |
| 94 | Off-line vs. On-line Tuning: A Study on $mathcal{MAX--MIN}$ Ant System for the TSP. Lecture Notes in Computer Science, 2010, , 239-250. | 1.3 | 8 |
| 95 | Analysing Robot Swarm Decision-Making with Bio-PEPA. Lecture Notes in Computer Science, 2012, , 25-36. | 1.3 | 8 |
| 96 | Lazy Learning: A Logical Method for Supervised Learning. Studies in Fuzziness and Soft Computing, 2002, , 97-136. | 0.8 | 7 |
| 97 | Implementation Effort and Performance. Lecture Notes in Computer Science, 2007, , 31-45. | 1.3 | 7 |
| 98 | Off-line and On-line Tuning: A Study on Operator Selection for a Memetic Algorithm Applied to the QAP. Lecture Notes in Computer Science, 2011, , 203-214. | 1.3 | 7 |
| 99 | Incremental Local Search in Ant Colony Optimization: Why It Fails for the Quadratic Assignment Problem. Lecture Notes in Computer Science, 2006, , 156-166. | 1.3 | 6 |
| 100 | Evaluation of Alternative Exploration Schemes in the Automatic Modular Design of Robot Swarms. Communications in Computer and Information Science, 2020, , 18-33. | 0.5 | 6 |
| 101 | Probabilistic Analysis of Long-Term Swarm Performance under Spatial Interferences. Lecture Notes in Computer Science, 2013, , 121-132. | 1.3 | 6 |
| 102 | AutoMoDe-Arlequin: Neural Networks as Behavioral Modules for the Automatic Design of Probabilistic Finite-State Machines. Lecture Notes in Computer Science, 2020, , 271-281. | 1.3 | 6 |
| 103 | AutoMoDe-Cedrata: Automatic Design of Behavior Trees for Controlling a Swarm of Robots with Communication Capabilities. SN Computer Science, 2022, 3, 1. | 3.6 | 6 |
| 104 | Modern Continuous Optimization Algorithms for Tuning Real and Integer Algorithm Parameters. Lecture Notes in Computer Science, 2010, , 203-214. | 1.3 | 5 |
| 105 | Dynamical Properties of Artificially Evolved Boolean Network Robots. Lecture Notes in Computer Science, 2015, , 45-57. | 1.3 | 5 |
| 106 | Iterative improvement in the automatic modular design of robot swarms. PeerJ Computer Science, 2020, 6, e322. | 4.5 | 5 |
| 107 | Opinion Dynamics for Decentralized Decision-Making in a Robot Swarm. Lecture Notes in Computer Science, 2010, , 251-262. | 1.3 | 5 |
| 108 | AutoMoDe-Mate: Automatic off-line design of spatially-organizing behaviors for robot swarms. Swarm and Evolutionary Computation, 2022, 74, 101118. | 8.1 | 5 |

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| 109 | Adaptive memory based regression methods. , 0, , . | | 4 |
| 110 | The Metaphysical Character of the Criticisms Raised Against the Use of Probability for Dealing with Uncertainty in Artificial Intelligence. Minds and Machines, 2008, 18, 273-288. | 4.8 | 4 |
| 111 | On the sensitivity of reactive tabu search to its meta-parameters. Soft Computing, 2014, 18, 2177-2190. | 3.6 | 4 |
| 112 | Automatic Modular Design of Behavior Trees for Robot Swarms with Communication Capabilites. Lecture Notes in Computer Science, 2021, , 130-145. | 1.3 | 4 |
| 113 | Towards an integrated automatic design process for robot swarms. Open Research Europe, 0, 1, 112. | 2.0 | 4 |
| 114 | On the Invariance of Ant System. Lecture Notes in Computer Science, 2006, , 215-223. | 1.3 | 4 |
| 115 | MADS/F-Race: Mesh Adaptive Direct Search Meets F-Race. Lecture Notes in Computer Science, 2010, , 41-50. | 1.3 | 4 |
| 116 | Temporal Task Allocation in Periodic Environments. Lecture Notes in Computer Science, 2014, , 182-193. | 1.3 | 4 |
| 117 | Incremental Social Learning Applied to a Decentralized Decision-Making Mechanism: Collective Learning Made Faster. , 2010, , . | | 3 |
| 118 | Complexity Measures: Open Questions and Novel Opportunities in the Automatic Design and Analysis of Robot Swarms. Frontiers in Robotics and AI, 2019, 6, 130. | 3.2 | 3 |
| 119 | Costs and Benefits of Behavioral Specialization. Lecture Notes in Computer Science, 2011, , 90-101. | 1.3 | 3 |
| 120 | Boolean Network Robotics as an Intermediate Step in the Synthesis of Finite State Machines for Robot Control. , 0, , . | | 3 |
| 121 | Exogenous Fault Detection in a Collective Robotic Task. , 2007, , 555-564. | | 3 |
| 122 | ANTS 2010 special issue. Swarm Intelligence, 2011, 5, 143-147. | 2.2 | 2 |
| 123 | Invention Versus Discovery. , 2013, , 1139-1146. | | 2 |
| 124 | Enhancing the Cooperative Transport of Multiple Objects. Lecture Notes in Computer Science, 2008, , 307-314. | 1.3 | 2 |
| 125 | Identification of Dynamical Structures in Artificial Brains: An Analysis of Boolean Network Controlled Robots. Lecture Notes in Computer Science, 2013, , 324-335. | 1.3 | 2 |
| 126 | AutoMoDe-IcePop: Automatic Modular Design of Control Software for Robot Swarms Using Simulated Annealing. Communications in Computer and Information Science, 2020, , 3-17. | 0.5 | 2 |

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| 127 | Combining Lazy Learning, Racing and Subsampling for Effective Feature Selection. , 2005, , 393-396. | | 1 |
| 128 | Engineering self-coordinating software intensive systems. , 2010, , . | | 1 |
| 129 | ANTS 2014 special issue: Editorial. Swarm Intelligence, 2015, 9, 71-73. | 2.2 | 1 |
| 130 | Complexity Measures in Automatic Design of Robot Swarms: An Exploratory Study. Communications in Computer and Information Science, 2018, , 243-256. | 0.5 | 1 |
| 131 | Off-Policy Evaluation of the Performance of a Robot Swarm: Importance Sampling to Assess Potential Modifications to the Finite-State Machine That Controls the Robots. Frontiers in Robotics and AI, 2021, 8, 625125. | 3.2 | 1 |
| 132 | Out-of-the-Box and Custom Implementation of Metaheuristics. A Case Study: The Vehicle Routing Problem with Stochastic Demand. Studies in Computational Intelligence, 2011, , 273-295. | 0.9 | 1 |
| 133 | Local Learning for Nonlinear Control. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 1998, 31, 351-356. | 0.4 | 0 |
| 134 | Data-Driven Techniques for Divide and Conquer Adaptive Control. IFAC Postprint Volumes IPPV / International Federation of Automatic Control, 2000, 33, 59-64. | 0.4 | 0 |
| 135 | ANTS 2012 special issue. Swarm Intelligence, 2013, 7, 79-81. | 2.2 | 0 |
| 136 | ANTS 2016 special issue: Editorial. Swarm Intelligence, 2017, 11, 181-183. | 2.2 | 0 |
| 137 | ANTS 2018 special issue: Editorial. Swarm Intelligence, 2019, 13, 169-172. | 2.2 | 0 |
| 138 | ACO Applied to Switch Engine Scheduling in a Railroad Yard. Lecture Notes in Computer Science, 2006, , 502-503. | 1.3 | 0 |
| 139 | Background and State-of-the-Art. Studies in Computational Intelligence, 2009, , 11-67. | 0.9 | 0 |
| 140 | Experiments and Applications. Studies in Computational Intelligence, 2009, , 117-169. | 0.9 | 0 |
| 141 | Invention Versus Discovery. , 2020, , 1485-1492. | | 0 |