Mario Andrés Muñoz Acosta

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Born: September 26, 1981–Pasto, Colombia
Nationality: Australian/Colombian

Education

2009-2014 **Ph.D. (Engineering)** The University of Melbourne, Parkville, VIC, Australia
Thesis: *Decision support systems for the automatic selection of algorithms for continuous optimization problems*

2011-2012 **Grad.Cert. Advanced Learning and Leadership** The University of Melbourne, Parkville, VIC, Australia

2006-2008 **M.Eng. (Electronics)** Universidad del Valle, Cali, Colombia
Thesis: *Evolutionary strategies for swarm algorithm tuning and its application on complex systems control* **(Laureate Thesis)**

1999-2005 **B.Eng. (Electronics)** Universidad del Valle, Cali, Colombia
Thesis: *Dynamic resource allocation on a MIMO control system using bio-inspired techniques*

1998-1999 **High School Diploma** Parkland High School, Orefield, PA 18069, USA

1992-1998 **Bachiller Académico** Instituto Champagnat, Pasto, Colombia

Professional development

Since 2019 **Grad.Cert. University Teaching** The University of Melbourne, Parkville, VIC, Australia

2020 **IBM Data Science Specialization** Coursera

2017 **Complex Systems Summer School** Santa Fe Institute, Santa Fe, NM, USA

Employment History

Since 2022 **Research Fellow (Continuing)** ARC Centre in Optimisation Technologies, Integrated Methodologies and Applications, The University of Melbourne, Parkville, VIC, Australia.

2017-2021 **Research Fellow** School of Mathematics and Statistics, The University of Melbourne, Parkville, VIC, Australia.

2018-2019 **Lecturer** (0.2FTE) School of Computer and Information Systems, The University of Melbourne, Parkville, VIC, Australia.

2014-2017 **Research Fellow** School of Mathematical Sciences, Monash University, Clayton, VIC, Australia.

2013 **Tutor** (Casual) Department of Computer and Information Systems, The University of Melbourne, Parkville, VIC, Australia.

2013 **Intern** (Casual) Australian Institute of Musculoskeletal Science, St. Albans, VIC, Australia.

2008-2009 **Adjunct Professor** School of Electrical and Electronics Engineering, Cali, Colombia

2008 **Intern** Department of Electrical and Computer Engineering, University of Delaware, Newark, DE, USA

Subjects taught

COMP90083 *Computational Modelling and Simulation* (PG, Elective) **Co-coordinator**, with Nicholas Geard [S2/2022] School of Computer and Information Systems, The University of Melbourne, Parkville, VIC, Australia.

COMP90038 *Algorithms and Complexity* (PG, Compulsory) **Co-coordinator**, with Toby Murray [S2/2019, S2/2018] School of Computer and Information Systems, The University of Melbourne, Parkville, VIC, Australia.

ECE3093 *Optimisation, estimation and Numerical Methods* (UG, Compulsory) **Tutor** [S1/2017, S1/2016, S1/2015] School of Mathematical Sciences, Monash University, Clayton, VIC, Australia.

COMP20005 *Engineering Computation* (UG, Compulsory) **Tutor** [S2/2013] School of Computer and Information Systems, The University of Melbourne, Parkville, VIC, Australia.

710070M *Neural Networks* (UG, Elective) **Sole teacher** [S2/2008, S1/2009, S2/2009] School of Electrical and Electronics Engineering, Cali, Colombia

710050 *Intelligent Control* (PG, Elective) **Sole teacher** [S2/2008, S1/2009, S2/2009] School of Electrical and Electronics Engineering, Cali, Colombia

7101910M *Basic Electronic Instrumentation* (UG, Compulsory) **Sole teacher** [S2/2008, S1/2009, S2/2009] School of Electrical and Electronics Engineering, Cali, Colombia

710202M *Electronic Measurements* (UG, Compulsory) **Sole teacher** [S2/2008, S1/2009] School of Electrical and Electronics Engineering, Cali, Colombia

Honorary Positions

Since 2021 **Associate Investigator**, Melbourne Centre for Data Science, The University of Melbourne, Parkville, VIC, Australia.

Since 2017 **Associate Investigator**, ARC Centre of Excellence for Mathematical and Statistical Frontiers, Parkville, VIC, Australia.

2017-2019 **University Affiliate**, School of Mathematical Sciences, Monash University, Clayton, VIC, Australia.

Grants, Scholarships & Honours

Grants

2021 **M.A. Muñoz** and S. Kandanaarachchi. *Exploring strategies for the construction of algorithm portfolios.* ARC Center of Excellence for Mathematical and Statistical Frontiers Research Sprint Scheme, Australia. (AU$20,000)

2020b L.E. Ruiz Acosta, D.A. Camargo Mayorga, **M.A. Muñoz** and M. Becerra-Fernández. *An intelligent model of corporate social responsibility.* Universidad Militar Nueva Granada,

Colombia. (CO$80,000,000 – AU$24,240)

2020a L.E. Ruiz Acosta, **M.A. Muñoz** and J.D. Sepúlveda-Chaverra. *A performance index of anti-corruption practices of Colombian enterprises.* Universidad Militar Nueva Granada, Colombia. (CO$40,000,000 – AU$12,120)

2018b L.E. Ruiz Acosta, D.A. Camargo Mayorga and **M.A. Muñoz**. *INV-ECO-2969 – A dynamic indicator of social responsibility based on GRI report data.* Universidad Militar Nueva Granada, Colombia. (CO$78,982,608 – AU$23,932)

2018a M. Yellishetty, S. Northey, Y. Yuan, Z. Weng, S. Walsh and **M.A. Muñoz**. *Evaluating Critical Raw Material Supply for Australia's Defence Sector.* Defence Science Institute, Australia. (AU$50,000)

2017b S. Kandanaarachchi, **M.A. Muñoz** and P.D. Talagala. *Preventing bushfires by early detection of branches on powerlines.* ARC Center of Excellence for Mathematical and Statistical Frontiers Research Support Scheme, Australia. (AU$13,468)

2017a K.A. Smith-Miles, R. Hyndman, **M.A. Muñoz** and J. Katsifolis. *LP160101885 – Intruder alert! Detecting and classifying events in noisy time series.* Australian Research Council, Australia. (AU$204,000)

2016 K.A. Smith-Miles, **M.A. Muñoz** and S. Kandanaarachchi. *RC53128 – Improved Intrusion Detection Analysis.* Department of Industry, Innovation and Science, Australia. (AU$100,000)

2015 K.A. Smith-Miles and **M.A. Muñoz**. *RC48547 – New mathematical models for data handling.* Department of Industry, Innovation and Science, Australia. (AU$100,000)

2013 S. Shokravi, **M.A. Muñoz** and P. Rosas. DreamLarge Student Engagement Grants, The University of Melbourne (AU$2,500)

2011 S. Halgamuge, R. Kruse, M. Liyanage, **M.A. Muñoz**, S. Shokravi, G. Russ and P. Held. *Environmental Modelling and Agent Management for Odour Source Localization.* Go8/DAAD Join Research Cooperation Scheme. (AU$19,560)

2009b E.F. Caicedo, C. Jaramillo and **M.A. Muñoz**. *1106-489-25187 – A solution to maximize vehicular mobility through intersections using swarm intelligence.* Departamento Administrativo de Ciencia, Tecnología e Innovación, Colombia. (CO$351,232,000 – AU$106,423)

2009a E.F. Caicedo, **M.A. Muñoz** and Z. Sandoval. *1106-487-25667 – Complex systems experimentation platform, with remote access and high demand processing, for engineering teaching and research.* Departamento Administrativo de Ciencia, Tecnología e Innovación, Colombia. (CO$269,026,000 – AU$81,515)

Equipment donations

2016 *Academic Hardware Donation Program*, Nvidia Corporation (US$5,499 – AU$8,084)

2014 *Academic Hardware Donation Program*, Nvidia Corporation (US$5,499 – AU$8,084)

Scholarships

2012b *M.A. Bartlett Special Travel Grant-in-aid*, The University of Melbourne (AU$85)

2012a *Melbourne Travel Abroad Scholarship*, The University of Melbourne (AU$1,500)

2011b *Melbourne International Research Scholarship*, The University of Melbourne (AU$34,290)

2011a *GCALL Scholarship*, The University of Melbourne (AU$12,400)

2009c *Melbourne International Fee Remission Scholarship*, The University of Melbourne (AU$130,048)

2009b *Ph.D. scholarship*, Ministerio de las Tecnologías de la Información y Comunicación, Colombia (US$40,000 – AU$58,800)

2009a *PCB scholarship*, Fundación Colfuturo, Colombia (US$25,000 – AU$36,750)

2006 *Fee remission scholarship*, Universidad del Valle (CO$15,300,000 – AU$4,636)

Prizes

2017 S. Kandanaarachchi, **M.A. Muñoz** and D. Talagala. *Vegetation Detection Challenge, Second Place.* Department of Environment, Land, Water and Planning, State of Victoria, Australia (AU$3,000)

Other Honours

2021 *Selected, Lecturer/Senior Lecturer (Ref. 514117).* The University of Queensland (Declined)

2019 *Shortlisted, Vienna Research Groups 2019.* Vienna Science and Technology Fund, Austria (€1.6M – AU$2.5M)

Researcher supervision

Current

Since 2022 Anthony Rasulo **(PhD student)**. *Explainable Algorithm Selection and Configuration through Instance Space.* Co-supervisor (30%), with Kate Smith-Miles, Manuel López-Ibañez, and Julia Handl. School of Mathematics and Statistics, The University of Melbourne; and Alliance Manchester Business School, The University of Manchester. **(Joint program)**

Since 2022 Javier Mora-Jimenez **(PhD student)**. *Multi-criteria Automatic Algorithm Configuration under Streaming Problem Instances.* Co-supervisor (25%), with Manuel López-Ibañez, Julia Handl, and Kate Smith-Miles. Alliance Manchester Business School, The University of Manchester; and School of Mathematics and Statistics, The University of Melbourne. **(Joint program)**

Since 2022 Nadhir Hassen **(PhD student)**. *Optimisation of windfarm energy production by selected turbine de-rating.* Co-supervisor (25%), with Kate Smith-Miles. School of Mathematics and Statistics, The University of Melbourne. In collaboration with AGL. **(Industry-based)**

Since 2021 Luxin Fang **(PhD student)**. *Topology estimation using smart meter measurements.* Co-supervisor (50%), with Lachlan Andrew. School of Computer and Information Systems, The University of Melbourne.

Since 2020 Nicolau Andres Thio **(PhD student)** *Multifidelity Optimisation.* Co-supervisor, with Kate Smith-Miles (50%). School of Mathematics and Statistics, The University of Melbourne. In collaboration with Boeing Australia. **(Industry-based)**

Since 2020 Hanan Alsouly **(PhD student)** *Constrained Dynamical Multi-objective Optimisation.* Co-supervisor (50%), with Michael Kirley. School of Computer and Information Systems, The University of Melbourne.

Since 2019 Hossein Alipour **(PhD student)** *Empirical analysis of dynamic maximum flow problems.* Co-supervisor, with Kate Smith-Miles (50%). School of Mathematics and Statistics, The University of Melbourne.

Completed

2022 Runqi Zhao **(MInfoTech student)** *Parallel Factor Analysis of biomechanical variables of ACL-Reconstruction subjects in single-leg hop landing test.* Sole supervisor. School of Computer and Information Systems, The University of Melbourne.

2022 Paul Ou **(MInfoTech student)** *Topological Data Analysis for Automated Algorithm Selection.* Sole supervisor. School of Computer and Information Systems, The University of Melbourne.

2021 Hamed Soleimani **(Research Assistant)**. Joint supervisor, with Sevvandi Kandanaarachchi. School of Mathematics and Statistics, The University of Melbourne.

2017-2022 Estefania Yap **(PhD student)** *Instance spaces for multi-objective black box optimisation.* Co-supervisor (50%), with Kate Smith-Miles. School of Mathematics and Statistics, The University of Melbourne.

2021 Yuxin Yan **(BSc student)**. *Testing an algorithm selection model based on the Maximum Mean Discrepancy.* Sole supervisor. School of Mathematics and Statistics, The University of Melbourne.

2019-2020 Hao Li **(MSc student)** *Evaluation of randomized heuristic algorithm behaviour through trajectory analysis.* Sole supervisor. School of Mathematics and Statistics, The University of Melbourne.

2019-2020 Christopher Hadi Oetomo **(MSc student)** *Analysis of online players' behaviour in a team based video game.* Sole supervisor. School of Computer and Information Systems, The University of Melbourne.

2019-2020 Mauricio Becerra-Fernández **(Research Assistant)** *A dynamic indicator of social responsibility based on GRI report data.* Joint supervisor, with Liliana Ruiz Acosta. Universidad Militar Nueva Granada (Colombia).

2018 Nandini Anantharama **(Research Assistant)** *Preventing bushfires by early detection of branches on powerlines.* Joint supervisor, with Sevvandi Kandanaarachchi. School of Mathematics and Statistics, The University of Melbourne.

2019 Zhenhao Yu **(MInfoTech student)** *Testing the effectiveness of PARAFAC model in feature reduction in abnormal gait recognition.* Principal supervisor, with Hossein Mokhtarzadeh. School of Computer and Information Systems, The University of Melbourne.

2016-2019 Sevvandi Kandanaarachchi **(Post-doctoral Researcher)** *Detection and classification of events in noisy time series.* Co-supervisor, with Rob Hyndman and Kate Smith-Miles. School of Business and Economics, Monash University; and School of Mathematics and Statistics, The University of Melbourne.

Publications

Journal articles

1. H. Alipour, **M.A. Muñoz**, and K. Smith-Miles. *Enhanced Instance Space Analysis for the*

Maximum Flow Problem. European Journal of Operational Research. 304(2)411–428. 2023.

2. Neelofar, K. Smith-Miles, **M.A. Muñoz** and A. Aleti. *Instance Space Analysis of Search-Based Software Testing*. IEEE Transactions on Software Engineering. 2022. [DOI]
3. K. Smith-Miles and **M.A. Muñoz**. *Instance Space Analysis for Algorithm Testing: Methodology and Software Tools*. ACM Computing Surveys. 2022. [DOI]
4. H. Alsouly, M. Kirley and **M.A. Muñoz**. *An Instance Space Analysis of Constrained Multi-Objective Optimization Problems*. IEEE Transactions on Evolutionary Computation. 2022. [DOI]
5. N. Andrés-Thio, **M.A. Muñoz** and K. Smith-Miles. *Bi-fidelity Surrogate Modelling: Showcasing the need for new test instances*. INFORMS Journal on Computing. 34(6)3007–3022. 2022. **(Featured Article)**
6. K. Smith-Miles and **M.A. Muñoz**. *Human versus computer construction of mathematical artworks on an order-disorder aesthetic spectrum*. Journal of Mathematics and the Arts. 16:4, 347–373. 2022.
7. E. Yap, **M.A. Muñoz** and K. Smith-Miles. *Informing multi-objective optimisation benchmark construction through Instance Space Analysis*. IEEE Transactions on Evolutionary Computation. 26(6)1246–1260. 2022.
8. M. Becerra-Fernández, L.E. Ruiz-Acosta, D.A. Camargo-Mayorga and **M.A. Muñoz**. *A system dynamics model for sustainable corporate strategic planning*. Production. 32:e20220011. 2022.
9. **M.A. Muñoz**, M. Kirley and K. Smith-Miles. *Analyzing randomness effects on the reliability of Landscape Analysis*. Natural Computing. 21:131–154. 2022.
10. P. Sritharan, **M.A. Muñoz**, P. Pivonka, A.L. Bryant, H. Mokhtarzadeh, and L.G. Perraton. *Biomechanical markers of forward hop-landing after ACL-reconstruction: a pattern recognition approach*. Annals of Biomedical Engineering. 50(3)330–342. 2022. **(Co-first author)**
11. E. Yap, **M.A. Muñoz** and K. Smith-Miles. *On the diversity and robustness of parameterised multi-objective test suites*. Applied Soft Computing. 110:107613. 2021.
12. S. Kandanaarachchi, N. Anantharama and **M.A. Muñoz**. *Early detection of vegetation ignition due to powerline faults*. IEEE Transactions on Power Delivery. 36(3)1324–1334. 2021.
13. K. Smith-Miles, J. Christiansen and **M.A. Muñoz**. *Revisiting* Where are the Hard Knapsack Problems? *via Instance Space Analysis*. Computers & Operations Research. 128:105184. 2021.
14. **M.A. Muñoz**, T. Yan, M.R. Leal, K. Smith-Miles, A.C. Lorena, G.L. Pappa and R. Madureira Rodrigues. *An Instance Space Analysis of Regression Problems*. ACM Transactions on Knowledge Discovery from Data, 15(2:28)1–25. 2021.
15. **M.A. Muñoz** and M. Kirley. *Sampling effects on algorithm selection for continuous black-box optimization*. Algorithms. 14(1)19. 2021.
16. **M.A. Muñoz** and K. Smith-Miles. *Generating new space-filling test instances for continuous black-box optimization*. Evolutionary Computation, 28(3)379–404. 2020.
17. P. Sritharan, L. Perraton, **M.A. Muñoz**, P. Pivonka and A. Bryant. *Muscular coordination of single-leg hop-landing in uninjured and ACL-reconstructed individuals*. Journal of Applied Biomechanics, 36(4)235–243. 2020.

18. M.B. Flegg, **M.A. Muñoz**, K. Smith-Miles, W.S. Yuen, J. Flegg and J. Carroll. *Parameter estimation for a point-source diffusion-decay morphogen model.* Journal of Mathematical Biology, 80:2227–2255. 2020.
19. P.D. Talagala, R.J. Hyndman, K. Smith-Miles, S. Kandanaarachchi and **M.A. Muñoz**. *Anomaly detection in streaming nonstationary temporal data.* Journal of Computational and Graphical Statistics, 29(1)13–27. 2020.
20. S. Kandanaarachchi, **M.A. Muñoz**, R.J. Hyndman and K. Smith-Miles. *On normalization and algorithm selection for unsupervised outlier detection.* Data Mining and Knowledge Discovery, 34:309–354. 2020.
21. Y. Yuan, M. Yellishetty, G.M. Mudd, **M.A. Muñoz**, S.A. Northey and T.T. Werner. *Toward dynamic evaluations of materials criticality: A systems framework applied to Platinum.* Resources, Conservation & Recycling, 152:104532. 2020.
22. Y. Yuan, M. Yellishetty, **M.A. Muñoz** and S.A. Northey. *Towards a dynamic evaluation of minerals criticality: Introducing the framework of criticality systems.* Journal of Industrial Ecology, 23(5)1264–1277. 2019.
23. **M.A. Muñoz**, L. Villanova, D. Baatar and K. Smith-Miles. *Instance spaces for machine learning classification.* Machine Learning, 107(1)109–147. 2018.
24. **M.A. Muñoz** and K.A. Smith-Miles. *Performance analysis of continuous black-box optimization algorithms via footprints in instance space.* Evolutionary Computation, 25(4)529–554. 2017.
25. **M.A. Muñoz**, Y. Sun, M. Kirley and S.K. Halgamuge. *Algorithm selection for black-box continuous optimization problems: a survey on methods and challenges.* Information Sciences, 317:224–245. 2015.
26. **M.A. Muñoz**, M. Kirley and S.K. Halgamuge. *Exploratory Landscape Analysis of Continuous Space Optimization Problems using Information Content.* IEEE Transactions on Evolutionary Computation, 19(1)74–87. 2015.
27. H. Mokhtarzadeh, L. Perraton, L. Fok, **M.A. Muñoz**, R. Clark, P. Pivonka and A.L. Bryant. *A comparison of optimization methods and knee joint degrees of freedom on muscle force predictions during single-leg hop landings.* Journal of Biomechanics, 47(12)2863–2868. 2014.
28. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *An Artificial Beehive for Continuous Optimization.* International Journal of Intelligent Systems, 24(11)1080–1093. 2009.
29. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Inteligencia de enjambres: sociedades para la solución de problemas (una revisión) | Swarm intelligence: problem-solving societies (a review)* Revista Ingeniería e Investigación, 28(2)119–130. 2008. **(In Spanish)**
30. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Optimización por Colonia de Hormigas para la Asignación Dinámica de Recursos en una Plataforma de Experimentación de Temperatura Multizona | Ant Colony Optimization for Dynamical Resource Allocation in a Multizone Temperature Experimentation Platform.* IEEE Latin America Transactions, 5(2)82–87. 2007. **(In Spanish)**

Scholarly books

1. E. Caicedo, J.A. López and **M.A. Muñoz**. *Control Inteligente | Intelligent Control.* Programa Editorial Universidad del Valle, 2010. ISBN: 978-958-670-962-0. **(In**

Spanish)

Scholarly book chapters

1. **M.A. Muñoz**, A. Muñoz del Castillo, S. Shokravi and J.A. Jiménez Toledo. *TITAN: una herramienta para analizar Ambientes Virtuales de Aprendizaje – Diseño preliminar | TITAN: An analysis tool for Virtual Learning Environments - Preliminary Design.* In Tecnología, innovación e investigación en los procesos de enseñanza-aprendizaje. pp. 927–935. Octaedro (2017) **(In Spanish)**
2. **M.A. Muñoz**, M. Kirley and S.K. Halgamuge. *The Algorithm Selection Problem on the Continuous Optimization Domain.* In Computational Intelligence in Intelligent Data Analysis. SCI 445, pp. 75–89. Springer, Heidelberg (2012).

Refereed conference papers

1. **M.A. Muñoz**. *Examining Algorithm Behavior using Recurrence Quantification and Landscape Analyses.* Analysing Algorithmic Behaviour of Optimisation Heuristics Workshop – Genetic and Evolutionary Computation Conference, July 9-13, 2022. Boston, MA, USA.
2. **M.A. Muñoz**, H. Soleimani and S. Kandanaarachchi. *Benchmarking Algorithm Portfolio Construction Methods.* Genetic and Evolutionary Computation Conference, July 9-13, 2022. Boston, MA, USA.
3. D.X. Ramos, J.A. Jiménez Toledo, A. Muñoz del Castillo, L.C. Acosta Huertas, E. Herrera and **M.A. Muñoz**. *Computational Thinking for Teacher Training: A Systematic Review of Literature.* 18th LACCEI International Multi-Conference for Engineering, Education, and Technology. July 27-31, 2020. **(In Spanish)**
4. E. Yap, **M.A. Muñoz**, K. Smith-Miles and A. Liefooghe. *Instance Space Analysis of Combinatorial Multi-objective Optimization Problems.* IEEE Congress in Evolutionary Computation, July 19-24, 2020. Glasgow, UK.
5. M. Becerra-Fernández, L.E. Ruiz-Acosta, D.A. Camargo-Mayorga and **M.A. Muñoz**. *Modelo de responsabilidad social corporativa: Un enfoque de dinámica de sistemas | A model of corporate social responsibility: A system dynamics approach.* XVII Congreso Latinoamericano y Encuentro Colombiano de Dinámica de Sistemas. November 13-15, 2019. Bogotá, Colombia. **(In Spanish)**
6. A. Muñoz del Castillo, **M.A. Muñoz**, L.C. Acosta Huertas, E. Herrera, J.A. Jiménez Toledo and D.X. Ramos. *Developing a teacher training curriculum including Computational Thinking skills: Early advances on a study focused on Colombia.* XIV Latin American Conference on Learning Objects, October 30 - November 1, 2019. San José del Cabo, BSC, Mexico. pp. 8–11.
7. S. Kandanaarachchi, **M.A. Muñoz** and K. Smith-Miles. *Instance space analysis for unsupervised outlier detection.* Workshop on Evaluation and Experimental Design in Data Mining and Machine Learning – SIAM International Conference on Data Mining, May 2-4, 2019. Calgary, Canada.
8. **M.A. Muñoz** and K.A. Smith-Miles. *Generating custom classification datasets by targeting the instance space.* Workshop on New Standards for Benchmarking in

Evolutionary Computation Research – Genetic and Evolutionary Computation Conference, July 15-19, 2017. Berlin, Germany.

9. **M.A. Muñoz** and K.A. Smith-Miles. *Non-parametric model of the space of continuous black-box optimization problems.* Genetic and Evolutionary Computation Conference, July 15-19, 2017. Berlin, Germany.
10. **M.A. Muñoz** and M. Kirley. *ICARUS: Identification of Complementary algoRithms by Uncovered Sets.* IEEE Congress in Evolutionary Computation, July 24-29, 2016. Vancouver, Canada.
11. **M.A. Muñoz** and K.A. Smith-Miles. *Effects of function translation and dimensionality reduction on landscape analysis.* IEEE Congress in Evolutionary Computation, May 25-28, 2015. Sendai, Japan. pp. 1336–1342.
12. Y. Sun, M. Kirley, S.K. Halgamuge and **M.A. Muñoz**. *On the selection of fitness landscape analysis metrics for continuous optimization problems.* 7th International Conference on Information and Automation for Sustainability, December 22-24, 2014. Colombo, Sri Lanka.
13. **M.A. Muñoz**, M. Kirley and S.K. Halgamuge. *A Meta-Learning prediction model of algorithm performance for continuous optimization problems.* Parallel Problem Solving from Nature XII, September 1-5, 2012. Taormina, Italy. Lecture Notes in Computer Science, v. 7491, pp. 226–235.
14. **M.A. Muñoz**, M. Kirley and S.K. Halgamuge. *Landscape characterization of numerical optimization problems using biased scattered data.* IEEE Congress in Evolutionary Computation, June 10-15, 2012. Brisbane, Australia. pp. 2162–2169.
15. L.A. Bermeo, E.F. Caicedo, **M.A. Muñoz**, L.A. Clementi and J.R. Vega. *Sizing Nanoparticles from Dynamic Light Scattering Measurements: II. Evaluation of Particle Swarm Optimization Strategies.* Inverse Problems, Design and Optimization Symposium, August 25-27, 2010. João Pessoa, Brazil.
16. **M.A. Muñoz**, S.K. Halgamuge, W. Alfonso and E.F. Caicedo. *Simplifying the Bacteria Foraging Algorithm.* IEEE Congress in Evolutionary Computation, July 18-23, 2010. Barcelona, Spain. pp. 4095–4101.
17. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Self-Adaptive Bacteria Swarm for Optimization.* Electronics, Robotics and Automotive Mechanics Congress – CERMA 2008, September 30 - October 3, 2008. Cuernavaca, México. pp. 45-49.
18. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Bacteria Swarm Foraging Optimization for Dynamical Resource Allocation in a Multizone Temperature Experimentation Platform.* International Fuzzy Systems Association Congress – IFSA 2007, June 18-21, 2007. Cancun, Mexico. Analysis and Design of Intelligent Systems using Soft Computing Techniques. Advances in Soft Computing, v. 41, pp. 427–435.
19. **M.A. Muñoz**, E.F. Caicedo and J.A. López. *Optimización y Control usando Colonias de Hormigas | Optimization and Control using Ant Colonies.* VII Congreso de la Asociación Colombiana de Automática, March 21-23, 2007. Cali, Colombia. **(In Spanish)**
20. **M.A. Muñoz**, E.F. Caicedo and J.A. López. *Estudio Comparativo de Esquemas de Control Inteligente Aplicado a un Tanque con Agitación Continua | A Comparison study of Intelligent Control Schemes applied to a Continuous Stirring Tank.* VII Congreso de la Asociación Colombiana de Automática, March 21-23, 2007. Cali, Colombia. **(In Spanish)**

21. **M.A. Muñoz**, E.F. Caicedo and J.A. López. *Una Propuesta para la Enseñanza del Control Inteligente Basada en Problemas | A proposal for the teaching of Intelligent Control based on Problems.* VII Congreso de la Asociación Colombiana de Automática, March 21-23, 2007. Cali, Colombia. **(In Spanish)**
22. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Ant Colony Optimization for Dynamical Resource Allocation in a Multizone Temperature Experimentation Platform.* Electronics, Robotics and Automotive Mechanics Congress – CERMA 2006, September 26-30, 2006. Cuernavaca, Mexico. pp. 137–142. **Best Paper Award**.
23. **M.A. Muñoz**, J.A. López and E.F. Caicedo. *Implementation of a Distributed Control Experimentation Platform.* IEEE Conference on Industrial Electronics and Control Applications – ICIECA 2005, November 29 - December 2, 2005. Quito, Ecuador.
24. **M.A. Muñoz**, E.F. Caicedo and J.A. López. *Control Inteligente de un Tanque con Agitación Continua | Intelligent Control of a Continuous Stirring Tank.* XI Congreso Latinoamericano de Control Automático, May 10-15, 2004. La Habana, Cuba. **(In Spanish)**

Work under review or revision

1. H. Alipour, **M.A. Muñoz**, and K. Smith-Miles. *On the Impact of Initialisation Strategies on Maximum Flow Algorithm Performance.* Computers & Operations Research. First round or reviews received on January 2023.

Abstracts

1. H. Soleimani, K. Smith-Miles, J. Rasku and **M.A. Muñoz**. *Instance Space Analysis of Capacitated Vehicle Routing Problems.* 31st European Conference on Operational Research. July 11–14, 2021. Athens, Greece.
2. D.A. Camargo-Mayorga, M. Becerra-Fernández and **M.A. Muñoz**. *Aproximación a la construcción de un indicador de desempeño social para la medición de la RSE.* IV Reunión Iberoamericana de Socioeconomía. November 20–22, 2019. Costa Rica. **(In Spanish)**
3. **M.A. Muñoz**, A. Muñoz del Castillo, S. Shokravi and J.A. Jiménez Toledo. *Una herramienta para analizar Ambientes Virtuales de Aprendizaje elaborados con COLOSSUS - Revisión del estado del arte | A tool for the analysis of Virtual Learning Environments built using COLOSSUS - A review of the state-of-the-art.* XIX Congreso Internacional EDUTEC. November 9-11, 2016. Alicante, Spain. **(In Spanish)**
4. H. Mokhtarzadeh, L. Perraton, L. Fok, **M.A. Muñoz**, K. Fortin, R. Clark, P. Pivonka and A.L. Bryant. *Identification of kinetics and muscle forces following ACL reconstruction using state of the art computer analysis-based simulation and principle component analysis.* 7th World Congress on Biomechanics, July 6-11, 2014. Boston, USA.
5. H. Mokhtarzadeh, L. Perraton, L. Fok, **M.A. Muñoz**, P. Pivonka and A.L. Bryant. *Static optimization can predict co-contraction during hopping.* 2014 Orthopaedic Research Society Annual Meeting, March 15-18, 2014. New Orleans, USA.
6. **M.A. Muñoz**, M. Kirley and S.K. Halgamuge. *Some Insights About the Development of Algorithm Selection Models for Continuous Optimization.* Workshop on Landscape

Analysis, Automated Algorithm Selection and Adaptation in Optimization – Foundations of Genetic Algorithms, January 16-20, 2013. Adelaide, Australia.

Invited talks

1. **M.A. Muñoz**. *Three questions on benchmarking, problem analysis and algorithm selection.* Lorentz Center Workshop – Benchmarked: Optimization meets Machine Learning. November 9-13. 2020.
2. K. Smith-Miles and **M.A. Muñoz**. *Tutorial – Instance Space Analysis for Rigorous and Insightful Algorithm Testing.* IEEE World Congress on Computational Intelligence (WCCI) 2020. July 19-24, 2020. Glasgow, UK.
3. **M.A. Muñoz** *Complexity and learning: How computers help us to gather insights from a messy world.* Geosciences Australia. December 15, 2017. Canberra, Australia.
4. **M.A. Muñoz** *Workshop – Experiences publishing in Q1 Journals.* Universidad Militar Nueva Granada. July 26, 2017. Bogotá, Colombia.
5. **M.A. Muñoz**. *Building and exploiting a non-parametric problem space.* Dagstuhl Seminar 16412 – Automated Algorithm Selection and Configuration. October 9-14, 2016. Wadern, Germany.

Software

Since 2015 **Lead developer**, Melbourne Algorithm Test Instance Library with Data Analytics (MATILDA) computational engine for Instance Space Analysis. [HTML]

Service

Institute committee memberships

2021- **Member**, Education and Training sub-committee, ARC Centre in Optimisation Technologies, Integrated Methodologies and Applications

Grant Reviews

[Parenthesis indicate the number of reviewed grants]

2021- **Detailed Assessor**, Australian Research Council (3)

Technical committee memberships

[Parenthesis indicate the number of reviewed papers]

2023- International Conference on the Applications of Evolutionary Computation (2)
2022- Association for the Advancement of Artificial Intelligence Conference (6)
2022- LACCEI International Multi-Conference for Engineering, Education, and Technology (4)
2021- GECCO Workshop on Analysing Algorithmic Behaviour of Optimisation Heuristics (2)
2021- GECCO Workshop on Landscape-Aware Heuristic Search (1)
2020- Parallel Problem Solving from Nature (8)
2015- IEEE Congress on Evolutionary Computation (23)

Journal Reviews

[Parenthesis indicate the number of reviewed papers]

2022- SoftwareX (1)
2022- ACM Transactions on Evolutionary Learning and Optimization (1)
2022- Expert Systems with Applications (1)
2021- Applied Sciences (2)
2021- Big Data (2)
2020- Evolutionary Computation (1)
2020- 4OR – A Quarterly Journal of Operations Research (1)
2019- BMC Medical Informatics and Decision Making (3)
2019- Granular Computing (1)
2018- International Journal of Computational Science and Engineering (1)
2017- Memetic Computing (5)
2017- IEEE Transactions on Cybernetics (2)
2017- Chaos, Solitons and Fractals (1)
2016- Knowledge-Based Systems (4)
2016- Applied Soft Computing (4)
2016- Revista Politécnica **(In Spanish)** (1)
2015- Soft Computing (4)
2014- IEEE Potentials (2)
2014- Swarm and Evolutionary Computation (24)
2011- IEEE Transactions on Evolutionary Computation (15)

Editorial duties

2020 **Guest Editor**, with Katherine Malan. *Benchmarking, Selecting and Configuring Learning and Optimization Algorithms.* Algorithms. MDPI.