Fabio Caraffini

Curriculum Vitae

ORCID: 0000-0001-9199-7368 ✉ fabio.caraffini@gmail.com

Employment history

Since 23/08/2022	Associate Professor (Swansea University, UK)
1/8/2020 - 22/08/2022	Associate Professor - Research & Innovation (De Montfort University, UK)
1/3/2015 - 31/7/2020	VC2020/Senior Lecturer in Computer Science (De Montfort University, UK)
18/06/2012 - 28/2/2015	Hourly-Paid Part-Time Lecturer (De Montfort University, UK)

Memberships

since 1/09/2025	EPSRC Peer Review College
02/10/2023 - 01/10/2027	ROAR-NET Cost Action member
since 2023	IEEE Special Interest Group on Humanitarian Technology (SIGHT)
2012	IEEE Computational Intelligence Society (CIS)
since 2021	ACM SIGEVO Member
since 2020	Benchmarking Network
since 2020	IEEE CIS Task Force on Benchmarking
since 2022	IEEE Senior Member
2012-2021	IEEE Member

Honours degrees

10/2016	PhD in Computing and Mathematical Sciences (University of Jyväskylä, Finland)
10/2014	PhD in Computer Science (De Montfort University, UK)
11/2011	MSc in Telecommunications Engineering (University of Perugia, Italy)
11/2008	BSc in Electronics Engineering (University of Perugia, Italy)

Certificates & professional recognition

10/2016	Post Graduate Certificate in Higher Education (PGCertHE)
10/2016	Fellow of the Higher Education Academy (FHEA)

Awards

21/06/2024	Outstanding Contribution to Shaping the University's People, Culture and Environment (Swansea University, Sponsored by Infonetica)
17/05/2024	Mathematics Best Paper Award (DOI:10.3390/math10071119)
2/02/2022-2-02/2031	Italian National Scientific Habilitation (area 09/H1, band 2) (Information Systems/Computer Engineering)
2/02/2022-2-02/2031	Italian National Habilitation (area 01/B1, band 2) (Computer Science)
27/05/2022	Editor's Choice Article (DOI: 10.3390/math9091002, Mathematics, MDPI)
30/10/2020	Editor's Choice Article (DOI:10.3390/math7111051, Mathematics, MDPI)
14/05/2020	Featured Paper (DOI:10.3390/math8050785, Mathematics, MDPI)
7/2016	Publons Reviewer Awards (Computer Science)
7/2016	Publons Reviewer Awards (Mathematics)
4/2013	IEEE CIS outstanding Student Travel Grant 2013 [**500 USD**]
4/2013	Laxton Bequest and Consolidated Travel Funds (DMU) [**800 GBP**]
7/2012-6/2014	PhD bursary (De Montfort university) [**26'000 GBP**]
5-9/2011	TUCEP Fund for International Internships [**2'500 EUR**]

Leadership, administrative duties & teaching

Swansea University (UK):

Since 08/11/2026	Zienkiewicz Institute theme lead - Foundation and Methods for Modelling, Data Science and AI
Since 1/10/2026	Module deliver of CSCM-072 Optimiastion Techniques (Level 7, postgrad)
Since 13/10/2026	Core Member of the Computer Science Teaching Attainment group
Since 1/01/2025	Zienkiewicz Institute PGR lead
1/07/2024-1/10/2025	Programme coordinator of MSc Artificial Intelligence
1/10/2024-30/09/2026	Module coordinator of CS-235 Software Engineering II (Level 5, undergrad)
Since 18/9/2023	Head of year 2 (BSc Computer Science, Software Engineering and Computer Science & AI)
Since 1/10/2022	Module coordinator of CS-210 Concurrency (Level 5, undergrad)
23/08/2022-1/10/2024	Computer Science Research Energies (CORE) Leadership Team

De Montfort University (Leicester, UK):

1/1/2021-23/08/2022	Institute Head of Research Students
1/1/2021-23/08/2022	Overseas programme leader of MSc AI at DMU Dubai
1/05/2022-12/07/2022	ED2030 postgraduate programme re-validation (new MSc AI)
1/8/2020-31/1/2021	Deputy Subject Group Leader - Games Mathematics & Intelligent Systems
1/9/2016-23/08/2022	Programme leader of MSc Intelligent Systems Programme leader of MSc Intelligent Systems & Robotics (admission, assessment boards, recruitment, programme management)
1/9/2016-23/08/202	Module leader of Calculus I (Level 4, undergrad), Calculus II (undergrad modules) (re-validated into Mathematical Analysis)
1/9/2015-23/08/2022	Module leader of Computational Intelligence Optimisation (level 7, postgrad)
1/9/2015-1/9/2016	Linear Algebra, Algorithms for Games
8/06/2012 - 28/2/2015	Quantitative Methods, Mathematical Methods, C programming for Games, etc.

Secured funds

22/01/2024	Wales Innovation Network: Small Grant Funding [**7,500 GBP, CI**]
31/07/2023	Morgan Advanced Studies Institute (MASI) Summit project [**30,000 GBP, PI**]
3/2021	DMU GCRF 2021 (DMU) [**3,100 GBP, PI**]
9/2020	Future Research Leaders 7 funds (DMU) [**1,500 GBP, PI**]
10/2021	Leicester City Longitudinal Study [**100,000 GBP, CI**]
1/4/2021	NLP Tool For Stop & Search (HEIF/DMU) [**17,124.80 GBP, CI**]
02/2019	GCRF competition 2018/2019 (DMU) [**23,500 GBP, PI**]
10/2018	VC2020 Additional Funding 2018/2019 (DMU) [**3,000 GBP**]
03/2018	Newton-Fund Royal Academy of Engineering grant [**50,000 GBP, CI**]
10/2018	Frontrunner Internship project (DMU) [$\sim$ **1,000 GBP**, PI]
1-7/2015	Jyväskylä Grant for Computing and Mathematical Sciences [**10,250 EUR, PI**]
1-7/2012	Jyväskylä Grant for Computing and Mathematical Sciences [**10,250 EUR, PI**]

Invited talks

- Tutorial: *Structural Bias in optimization algorithms* (Nov 2023, ECTA 2023, Rome, Italy)
- *Emerging Techniques for Optimisation Heuristics Analysis – Structural Bias Detection* (Aug 2023, International Colloquium on Artificial Intelligence, NUST, Pakistan)
- *Optimisation Applications in Engineering* (Nov 2018, EIA University, Colombia)
- *Metaheuristic Optimisation: from theory to tool implementation* (Nov 2018, EIA University, Colombia)

Editorial activities

Associate Editor of:

- Memetic Computing (Springer) [since 25/02/2025]
- IEEE Transactions on Evolutionary Computation [since 01/01/2024]
- Optimization (speciality section of Frontiers in Applied Mathematics and Statistics) [since 26/09/2023]
- Frontiers in Artificial Intelligence [since 9/03/2023]
- Evolutionary Intelligence (Springer) [since 6/08/2023]
- Applied Intelligence (Springer) [since 21/04/2022]
- International Journal of Intelligent Systems (Wiley) [since 8/12/2020]
- Mathematics (MDPI) [since 3/03/2020]

Special sessions & workshops:

- Special Session on Leveraging Emerging AI Paradigms in Biomedical Healthcare (AIiH 2024, 2025)
- Workshop on Analysing Algorithmic Behaviour of Optimisation Heuristics' (GECCO 2021 - 2024)
- Track 8: Intelligent Systems and Supply Chains for Sustainable Development (IEEE ISTAS 2023)
- Computational Intelligence for Sustainability (EVO* 2023-2024)
- Applications of Nature-inspired Computing for Sustainability and Development (EVO* 2021-2022)
- Recent Advances in Computational Intelligence Techniques and Applications (IEEE WCCI 2020)
- Workshop on Memetic Computing (IEEE SSCI 2014)

Special Issues:

- Applications of Computational Intelligence based Systems for Societal Enhancement (IJIS, Wiley, 2020)
- Swarm and Evolutionary Computation—Bridging Theory and Practice (MDPI Mathematics, 2020-2021)
- Artificial Intelligence for Sustainable Development (MDPI, Applied Sciences, 2020-2021)
- Evolutionary Computation & Swarm Intelligence (MDPI Mathematics, 2019-2020)
- Emerging Artificial Intelligence (AI) Technologies for Learning (MDPI, Applied Sciences, 2020-2021)

Other peer esteem indicators

Honorary positions

- Honorary Senior Research Fellow (24/8/2022 - 23/08/2026, De Montfort University, UK)

Invited grant proposals reviewer for

- the Engineering and Physical Sciences Research Council (EPSRC)
- the Natural Sciences and Engineering Research Council of Canada (NSERC)

Invited external supervisor of

- 1 MSc student at Leiden University (The Netherlands)
- 2 PhD students at Pontifical Xavierian University (Colombia)
- 2 PhD Student at De Montfort University (UK)
- 2 PhD students at University of Limerick (Ireland - current supervision)

Technical peer reviewer for (*selected forums*)

- IEEE Transactions on Evolutionary Computation*
- IEEE Transaction on Cybernetics;
- Information Fusion*, Elsevier;
- Swarm and Evolutionary Computation*, Elsevier;
- International Journal of Intelligent Systems*, Wiley;
- International Journal of Neural Systems*, IOS Press;
- Information Sciences, Elsevier*;
- Applied Soft Computing*, Elsevier;
- Expert Systems With Applications, Elsevier;
- Integrated Computer-Aided Engineering*, IOS Press;
- journal of Retailing and Consumer Services*, Elsevier;
- Soft Computing*, Springer;

* indicates selected forums where I have published.

Programme Committee of (*selected events*)

- IEEE Congress on Evolutionary Computation (CEC) 2013-2026;
- IEEE Symposium Series on Computational Intelligence (SSCI) 2013-2026;
- EvoStar 2017-2026;
- GECCO: The Genetic and Evolutionary Computation Conference 2019-2026;
- Parallel Problem Solving from Nature (PPSN) 2020-2026
- International Conference on Swarm, Evolutionary, and Memetic Computing (SEMCCO) 2013
- Workshop on Machine Learning & Optimization for Communications Networks (MaLeN) 2020
- ECTA at International Joint Conference on Computational Intelligence (IJCC) 2019-2022
-Conference on Computer Science and Intelligence Systems (FedCSIS) 2022-2023

External Examiner
- Habilitation Dissertation Committee Member (Brno University of Technology, Czech Republic)
- External Examiner for PhD Thesis (University of Sannio, Italy)
- External Examiner for MSc Thesis (Autonomous University of Querétaro, Mexico)

Other international roles
-Invited lecturer at 'DataSLO' Summer School 2025 (Norcia, Italy)
-Publication chair of IEEE ISTAS 2023
-Advisory committee member of ICIERA-2021

Postgraduate student supervision

Current PGR Students
8 PhD students at Swansea University, UK
1 MSc by Res student at Swansea University, UK

PhD Completions
5 at De Montfort University, UK
1 at Pontifical Xavierian University, Colombia

Publications

Journal publications

[J57] Muhammad Sohail, Hongying Zan, Kunli Zhang, Arifa Javed, Muhammad Abdullah, Junaid Abdul Wahid, and Fabio Caraffini. Uncertainty-aware multilingual ai-generated text detection using contrastive empowered multi-granular evidential network. *Expert Systems with Applications*, page 135017, 2026

[J56] Mohammad Abudayeh, David Elizondo, Sarah Greenfield, and Fabio Caraffini. How does thermal imaging compare with other pose estimation techniques? a survey on gait analysis in healthcare applications with a focus on knee osteoarthritis. *Artificial Intelligence Review*, 2026

[J55] Jarrad Neil Morden, Fabio Caraffini, Ali Hilal Al-Bayatti, Mohammed Abudayeh, and Mamadou Bamba. Safe speeds in rear-end collisions: Injury-risk thresholds from population-weighted event data recorder analysis. *Transport Policy*, 187:104329, 2026

[J54] Sadek Benhammada, Souheila Khalfi, Abdelghani Ababsa, and Fabio Caraffini. A network-based epidemic simulation model for assessing non-pharmaceutical interventions. *New Generation Computing*, 44(3):26, 2026

[J53] Adebamigbe Fasanmade, Ali H. Al-Bayatti, Jarrad Neil Morden, and Fabio Caraffini. Context-aware quantitative risk assessment machine learning model for drivers distraction. *Next Research*, page 101931, 2026

[J52] Muhammad Abdullah, Hongying Zan, Arifa Javed, Muhammad Sohail, Orken Mamyrbayev, Zhanibek Turysbek, Hassan Eshkiki, and Fabio Caraffini. A multimodal ensemble-based framework for detecting fake news using visual and textual features. *Mathematics*, 14(2):360, 2026

[J51] Muhammad Sohail, Zan Hongying, Muhammad Abdullah, Fabio Caraffini, Arifa Javed, and Hassan Eshkiki. Multi-scale feature fusion-based dynamic framework using continual learning to identify text generated by multiple large language models. *Knowledge-Based Systems*, 335:115206, 2026

[J50] Hassan Eshkiki, Farinaz Tanhaei, Fabio Caraffini, and Benjamin Mora. A survey of the application of explainable artificial intelligence in biomedical informatics. *Applied Sciences*, 15(24), 2025

[J49] Using generative artificial intelligence to enhance the performance of disadvantaged students in secondary education. *Social Sciences & Humanities Open*, 12:102110, 2025

[J48] Arslan Akbar, Suya Han, Naveed Urr Rehman, Kanwal Ahmed, Hassan Eshkiki, and Fabio Caraffini. Explainable breast cancer prediction from 3-dimensional dynamic contrast-enhanced magnetic resonance imaging. *Applied Intelligence*, 55(13):901, 2025

[J47] Muhammad Abdullah, Zan Hongying, Arifa Javed, Orken Mamyrbayev, Fabio Caraffini, and Hassan Eshkiki. A joint learning framework for fake news detection. *Displays*, 90:103154, 2025

[J46] Rosie Finnegan, Joseph Metcalfe, Sara Sharifzadeh, Fabio Caraffini, Xianghua Xie, Alberto Hornero, and Nicholas W. Synes. Temporal optimisation of satellite image-based crop mapping: A comparison of deep time series and semi-supervised time warping strategies. *IET Computer Vision*, 19(1):e70014, 2025

[J45] Juan F. Pérez-Pérez, Isis Bonet, María Solange Sánchez-Pinzón, Fabio Caraffini, and Christian Lochmuller. Using artificial intelligence to predict the financial impact of climate transition risks within organisations. *International Journal of Intelligent Systems*, 2024(1):3334263, 2024

[J44] Juan F. Pérez-Pérez, Pablo Isaza Gómez, Isis Bonet, María Solange Sánchez-Pinzón, Fabio Caraffini, and Christian Lochmuller. Assessing climate transition risks in the colombian processed food sector: A fuzzy logic and multi-criteria decision-making approach. *Mathematics*, 12(17), 2024

[J43] Soukaina Rhazzafe, Fabio Caraffini, Simon Colreavy-Donnelly, Younes Dhassi, Stefan Kuhn, and Nikola S. Nikolov. Hybrid summarization of medical records for predicting length of stay in the intensive care unit. *Applied Sciences*, 14(13), 2024

[J42] Souheila Khalfi, Fabio Caraffini, and Giovanni Iacca. Metaheuristics in the balance: A survey on memory-saving approaches for platforms with seriously limited resources. *International Journal of Intelligent Systems*, 2023(1):5708085, 2023

[J41] Jarrad Neil Morden, Fabio Caraffini, Ioannis Kypraios, Ali H. Al-Bayatti, and Richard Smith. Driving in the rain: A survey toward visibility estimation through windshields. *International Journal of Intelligent Systems*, 2023(1):9939174, 2023

[J40] Anna V. Kononova, Diederick Vermetten, Fabio Caraffini, Madalina-A. Mitran, and Daniela Zaharie. The Importance of Being Constrained: Dealing with Infeasible Solutions in Differential Evolution and Beyond. *Evolutionary Computation*, pages 1–46, 05 2023

[J39] Alejandro Pena, Juan C. Tejada, Juan David Gonzalez-Ruiz, Lina María Sepúlveda-Cano, Francisco Chiclana, Fabio Caraffini, and Mario Gongora. An evolutionary intelligent control system for a flexible joints robot. *Applied Soft Computing*, 135:110043, 2023

[J38] Stefan Kuhn, Carlos Cobas, Agustin Barba, Simon Colreavy-Donnelly, Fabio Caraffini, and Ricardo Moreira Borges. Direct deduction of chemical class from nmr spectra. *Journal of Magnetic Resonance*, 348:107381, 2023

[J37] Larry Su, Elmina Homapour, Fabio Caraffini, and Francisco Chiclana. An empirical investigation of multinationality and stock price crash risk for mncs in china. *Mathematics*, 10(19), 2022

[J36] Louis Ryan, Stefan Kuhn, Simon Colreavy-Donnely, and Fabio Caraffini. Particle swarm optimisation in practice: Multiple applications in a digital microscope system. *Applied Sciences*, 12(15), 2022

[J35] Matthew Fox, Shengxiang Yang, and Fabio Caraffini. A new moving peaks benchmark with attractors for dynamic evolutionary algorithms. *Swarm and Evolutionary Computation*, 74:101125, 2022

[J34] Diederick Vermetten, Bas van Stein, Fabio Caraffini, Leandro L. Minku, and Anna V. Kononova. BIAS: A toolbox for benchmarking structural bias in the continuous domain. *IEEE Transactions on Evolutionary Computation*, 26(6):1380–1393, 2022

[J33] James Izzard, Fabio Caraffini, and Francisco Chiclana. Towards a software tool for general meal optimisation. *Applied Intelligence*, 53(7):7751–7775, 2023

[J32] Simon Colreavy-Donelly, Alan Ryan, Stuart O'Connor, Fabio Caraffini, Stefan Kuhn, and Salim Hasshu. A proposed vr platform for supporting blended learning post covid-19. *Education Sciences*, 12(7), 2022

[J31] Elmina Homapour, Larry Su, Fabio Caraffini, and Francisco Chiclana. Regression analysis of macroeconomic conditions and capital structures of publicly listed british firms. *Mathematics*, 10(7):1119, Mar 2022

[J30] Antonio Agresta, Marco Baioletti, Chiara Biscarini, Fabio Caraffini, Alfredo Milani, and Valentino Santucci. Using optimisation meta-heuristics for the roughness estimation problem in river flow analysis. *Applied Sciences*, 11(22), 2021

[J29] Anna V. Kononova, Fabio Caraffini, and Thomas Bäck. Differential evolution outside the box. *Information Sciences*, 581:587–604, 2021

[J28] Stuart O'Connor, Salim Hasshu, James Bielby, Simon Colreavy-Donnelly, Stefan Kuhn, Fabio Caraffini, and Richard Smith. SCIPS: A serious game using a guidance mechanic to scaffold effective training for cyber security. *Information Sciences*, 580:524–540, 2021

[J27] Raymond Moodley, Francisco Chiclana, Fabio Caraffini, and Mario Gongora. Using self-organising maps to predict and contain natural disasters and pandemics. *International Journal of Intelligent Systems*, 37(4):2739–2757, 2022

[J26] Mohammad Khishe, Fabio Caraffini, and Stefan Kuhn. Evolving deep learning convolutional neural networks for early covid-19 detection in chest x-ray images. *Mathematics*, 9(9):1002, Apr 2021

[J25] Alejandro Pena, Alejandro Patino, Francisco Chiclana, Fabio Caraffini, Mario Gongora, Juan D. Gonzalez-Ruiz, and Eduardo Duque-Grisales. Fuzzy convolutional deep-learning model to estimate the operational risk capital using multi-source risk events. *Applied Soft Computing*, page 107381, 2021

[J24] Giovanni Iacca and Fabio Caraffini. Re-sampled inheritance compact optimization. *Knowledge-Based Systems*, 208:106416, 2020

[J23] Johana M Florez-Lozano, Fabio Caraffini, Carlos Parra, and Mario Gongora. A robust decision-making framework based on collaborative agents. *IEEE Access*, 8:150974–150988, 2020

[J22] Johana Florez-Lozano, Fabio Caraffini, Carlos Parra, and Mario Gongora. Cooperative and distributed decision-making in a multi-agent perception system for improvised land mines detection. *Information Fusion*, 64:32 – 49, 2020

[J21] Simon Colreavy-Donnelly, Fabio Caraffini, Stefan Kuhn, Mario Gongora, Johana Florez-Lozano, and Carlos Parra. Shallow buried improvised explosive device detection via convolutional neural networks. *Integrated Computer-Aided Engineering*, pages 1–14, 2020

[J20] Fabio Caraffini and Giovanni Iacca. The SOS platform: designing, tuning and statistically benchmarking optimisation algorithms. *Mathematics*, page 785., 2020

[J19] Raymond Moodley, Francisco Chiclana, Jenny Carter, and Fabio Caraffini. Using data mining in educational administration: A case study on improving school attendance. *Applied Sciences*, 10(9):3116, Apr 2020

[J18] Athinoula A. Kosti, Simon Colreavy-Donnelly, Fabio Caraffini, and Zacharias A. Anastassi. Efficient Computation of the Nonlinear Schrödinger Equation with Time-Dependent Coefficients. *Mathematics 2020, Vol. 8, Page 374*, 8(3):374, mar 2020

[J17] Jia Ming Yeoh, Fabio Caraffini, Elmina Homapour, Valentino Santucci, and Alfredo Milani. A clustering system for dynamic data streams based on metaheuristic optimisation. *Mathematics*, 12:1229, 2019

[J16] Valentino Santucci, Alfredo Milani, and Caraffini Fabio. An optimisation-driven prediction method for automated diagnosis and prognosis. *Mathematics*, 7:1052, 2019

[J15] Raymond Moodley, Francisco Chiclana, Fabio Caraffini, and Jenny Carter. A product-centric data mining algorithm for targeted promotions. *Journal of Retailing and Consumer Services*, page 101940, 2020

[J14] Fabio Caraffini, Anna V. Kononova, and David Corne. Infeasibility and structural bias in differential evolution. *Information Sciences*, pages 161 – 179, 2019

[J13] Fabio Caraffini, Ferrante Neri, and Michael Epitropakis. HyperSPAM: A study on hyper-heuristic coordination strategies in the continuous domain. *Information Sciences*, 477:186 – 202, 2019

[J12] Fabio Caraffini and Ferrante Neri. A study on rotation invariance in differential evolution. *Swarm and Evolutionary Computation*, 50:100436, 2019

[J11] Raymond Moodley, Francisco Chiclana, Fabio Caraffini, and Jenny Carter. Application of uninorms to market basket analysis. *International Journal of Intelligent Systems*, 34(1):39–49, 2019

[J10] Jixianga Cheng, Gexianga Zhang, Fabio Caraffini, and Ferrante Neri. Multicriteria adaptive differential evolution for global numerical optimization. *Integrated Computer-Aided Engineering*, 22(2):103–107, 2015

[J9] Anna Kononova, David W. Corne, Philippe De Wilde, Vsevolod Shneer, and Fabio Caraffini. Structural bias in population-based algorithms. *Information Sciences*, 298:468–490, 2015

[J8] Ilpo Poikolainen, Ferrante Neri, and Fabio Caraffini. Cluster-based population initialization for differential evolution frameworks. *Information Sciences*, 297:216–235, 2015

[J7] Fabio Caraffini, Ferrante Neri, and Lorenzo Picinali. An analysis on separability for memetic computing automatic design. *Information Sciences*, 265:1 – 22, 2014

[J6] Giovanni Iacca, Fabio Caraffini, and Ferrante Neri. Multi-strategy coevolving aging particle optimization. *International Journal of Neural Systems*, 24(01):1450008, 2014. PMID: 24344695

[J5] Fabio Caraffini, Ferrante Neri, Benjamin N. Passow, and Giovanni Iacca. Re-sampled inheritance search: High performance despite the simplicity. *Soft Computing*, pages 1–22, 2013

[J4] I. Poikolainen, Giovanni Iacca, Fabio Caraffini, and Ferrante Neri. Focusing the search: a progressively shrinking memetic computing framework. *International Journal of Innovative Computing and Applications*, 5:127–142, 2013

[J3] Giovanni Iacca, Fabio Caraffini, and Ferrante Neri. Memory-saving memetic computing for path-following mobile robots. *Applied Soft Computing*, 13(4):2003 – 2016, 2013

[J2] Fabio Caraffini, Ferrante Neri, Giovanni Iacca, and Aran Mol. Parallel memetic structures. *Information Sciences*, 227(0):60 – 82, 2013

[J1] Giovanni Iacca, Fabio Caraffini, and Ferrante Neri. Compact differential evolution light: high performance despite limited memory requirement and modest computational overhead. *Journal of Computer Science and Technology*, 27(5):1056–1076, 2012

Peer reviewed conference proceedings

[P49] Widad Oucif, Souheila Khalfi, Fabio Caraffini, and Farid Melgani. CNNs for bean leaf disease classification: Accuracy-efficiency trade-off analysis. In *2026 IEEE International Conference on Artificial Intelligence and Autonomous Systems (ICAIAS)*, 2026

[P48] Amarilis Lopez-Guerrero, Fabio Caraffini, Isidro A. Gutierrez-Alvarez, Gendry Alfonso-Francia, and Saúl Tovar Arriaga. Comparative analysis of convolutional, transformer and hybrid architectures for lateral ventricle segmentation in neonatal cranial ultrasound. In Miguel-Félix Mata-Rivera, Roberto Zagal-Flores, and Cristian Barria-Huidobro, editors, *Telematics and Computing*, pages 348–364, Cham, 2027. Springer Nature Switzerland

[P47] Marek T. Jezinski, Markus Roggenbach, Monika Seisenberger, Victor Cai, and Fabio Caraffini. Creating synthetic test data for rail design tools – the case of linear scheme plans. In Maurice H. ter Beek, Simon Collart-Dutilleul, and Thierry Lecomte, editors, *Reliability, Safety, and Security of Railway Systems. Modelling, Analysis, Verification, and Certification*, pages 78–87, Cham, 2026. Springer Nature Switzerland

[P46] Sarah Costa, Hassan Eshkiki, Fabio Caraffini, and Christopher H. George. Enhancing cardiac cell networks segmentation via hybrid supervised and zero-shot strategies. In Daniele Cafolla, Timothy Rittman, and Hao Ni, editors, *Artificial Intelligence in Healthcare*, pages 351–365, Cham, 2026. Springer Nature Switzerland

[P45] Raziyeh Moghaddas, Fabio Caraffini, and Monika Seisenberger. A multi-agent system for optimal train scheduling in single-track railways. In Pablo García-Sánchez, Emma Hart, and Sarah L. Thomson, editors, *Applications of Evolutionary Computation*, pages 320–333, Cham, 2025. Springer Nature Switzerland

[P44] Fabio Caraffini, Hassan Eshkiki, Mostafa Mohammadpour, Nikol Sullo, and Christopher H. George. Towards improving single-cell segmentation in heterogeneous configurations of cardiomyocyte networks. In Xianghua Xie, Iain Styles, Gibin Powathil, and Marco Ceccarelli, editors, *Artificial Intelligence in Healthcare*, pages 104–117, Cham, 2024. Springer Nature Switzerland

[P43] Abraham Etinosa Enobun, Uche Henry Anakwenze, Aboozar Taherkhani, Zacharias Anastassi, Fabio Caraffini, and Hassan Eshkiki. Segmenting breast ultrasound scans using a generative adversarial network embedding u-net. In Xianghua Xie, Iain Styles, Gibin Powathil, and Marco Ceccarelli, editors, *Artificial Intelligence in Healthcare*, pages 149–159, Cham, 2024. Springer Nature Switzerland

[P42] Leonardo Lucio Custode, Fabio Caraffini, Anil Yaman, and Giovanni Iacca. An investigation on the use of large language models for hyperparameter tuning in evolutionary algorithms. In *Proceedings of the Genetic and Evolutionary Computation Conference Companion*, GECCO '24 Companion, page 1838–1845, New York, NY, USA, 2024. Association for Computing Machinery

[P41] Tan Jo Yen, Sivakumar Vengusamy, Fabio Caraffini, Stefan Kuhn, and Simon Colreavy-Donnelly. Image processing model to estimate nutritional values in raw and cooked vegetables. In *2023 34th Conference of Open Innovations Association (FRUCT)*, pages 183–191, 2023

[P40] Lilian G Motti Ader, Katie Crowley, Stefan Kuhn, Fabio Caraffini, Turgay Altındağ, and Simon Colreavy-Donnelly. Extended reality, augmented users, and design implications for virtual learning environments. In *2023 IEEE International Symposium on Technology and Society (ISTAS)*, pages 1–8. IEEE, 2023

[P39] Juan F Pérez-Pérez, Isis Bonet Cruz, María Solange Sánchez-Pinzón, Fabio Caraffini, and Christian Lochmuller. Forecasting climate transition regulatory and market risk variables with machine learning. In *2023 IEEE International Symposium on Technology and Society (ISTAS)*, pages 1–8. IEEE, 2023

[P38] Mădălina-Andreea Mitran, Anna Kononova, Fabio Caraffini, and Daniela Zaharie. Patterns of convergence and bound constraint violation in differential evolution on sbox-cost benchmarking suite. In *Proceedings of the Companion Conference on Genetic and Evolutionary Computation*, GECCO '23 Companion, page 2337–2345, New York, NY, USA, 2023. Association for Computing Machinery

[P37] Bas Van Stein, Diederick Vermetten, Fabio Caraffini, and Anna V. Kononova. Deep bias: Detecting structural bias using explainable AI. In *Proceedings of the Companion Conference on Genetic and Evolutionary Computation*, GECCO '23 Companion, page 455–458, New York, NY, USA, 2023. Association for Computing Machinery

[P36] Diederick Vermetten, Fabio Caraffini, Anna V. Kononova, and Thomas Bäck. Modular differential evolution. In *Proceedings of the Genetic and Evolutionary Computation Conference*, GECCO '23, page 864–872, New York, NY, USA, 2023. Association for Computing Machinery

[P35] Antonio Agresta, Chiara Biscarini, Fabio Caraffini, and Valentino Santucci. An intelligent optimised estimation of the hydraulic jump roller length. In João Correia, Stephen Smith, and Raneem Qaddoura, editors, *Applications of Evolutionary Computation*, pages 475–490, Cham, 2023. Springer Nature Switzerland

[P34] Alejandro Puerta, Santiago Horacio Hoyos, Isis Bonet, and Fabio Caraffini. An AI-based support system for microgrids energy management. In João Correia, Stephen Smith, and Raneem Qaddoura, editors, *Applications of Evolutionary Computation*, pages 507–518, Cham, 2023. Springer Nature Switzerland

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