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GECCO'21 Companion

Proceedings of the 2021

**Genetic and Evolutionary Computation
Conference Companion**

Sponsored by:

ACM SIGEVO

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Dear GECCO attendees,

Welcome to the 2021 Genetic and Evolutionary Computation Conference (GECCO), hosted from Lille, France. GECCO'21 is the second edition, after GECCO'20 in Cancún, México, to be held online due to the global coronavirus crisis. For most of 2020, the Organizing Committee was making preparations for a hybrid mode. However, as progress at fighting the pandemic was slower than we had hoped, in December 2020 the decision was made to go fully online.

GECCO is the premier peer-reviewed conference in the field of Evolutionary Computation, and the main conference of the Special Interest Group on Genetic and Evolutionary Computation (SIGEVO) of the Association for Computing Machinery (ACM). To identify the most important and technically sound papers, the conference implements a rigorous and selective review process, conducted by two chairs per track in coordination with the Editor-in-Chief. The technical program is divided into 13 tracks reflecting all aspects of our field, including the new Neuroevolution track.

This year, we received 362 regular paper submissions and accepted 134 of them as oral presentations (37% acceptance rate) and 136 as posters. Besides the technical tracks, GECCO'21 offers 38 tutorials selected from 45 proposals, 22 workshops that cover important topics in our field, and a range of events: the Humies Awards ceremony, 13 competitions, Women@GECCO, Evolutionary Computation in Practice, a five-day SIGEVO Summer School preceding the conference, and more.

The highlights of the event are the keynotes given by three esteemed researchers: Joshua Tenenbaum of MIT, USA, Marc Mézard of École Normale Supérieure, France, and Melanie Mitchell of Santa Fe Institute, USA (SIGEVO keynote).

We are thankful to all authors, tutorial speakers, as well as workshop and competition organizers who contributed to GECCO despite the precarious pandemic conditions. We would also like to express our thanks to all organizers, in particular to all chairs: tracks, tutorials, workshops, publicity, competitions, late breaking abstracts, and hot-off-the-press. We also thank the organizers of the Humies, and of Women@GECCO, as well as to the members of our Program Committee. We sincerely appreciate all these efforts and contributions.

Some members of the organization team deserve particular recognition: Francisco Chicano, Editor-in-Chief; Bilel Derbel, Local Chair; Nadarajen Veerapen, Electronic Media Chair; Arnaud Liefoghe, Virtualization Chair; Aniko Ekart, Publicity Chair, and Alberto Tonda, Proceedings Chair. The effort of this core organizing team was essential for the success of GECCO'21. We also thank Ahmed Kheiri for optimizing the schedule of the conference, Brenda Ramirez and Roxane Rose of Executive Events who helped us with registrations and the logistics of the event, as well as Franz Rothlauf, Enrique Alba, Darrell Whitley and Peter Bosman from SIGEVO and the Business Committee for their valuable advice and guidance.

Last but not least, our gratitude goes to our generous business sponsors and institutional supporters: Cognizant, Google, eMapa, as well as University of Lille and Centre de Recherche en Informatique, Signal et Automatique de Lille (CRISTAL).

The Organizing Committee worked hard to provide diversified means for participating remotely in GECCO'21. To this aim, we engaged a few interlinked online platforms, which should facilitate not only listening to talks, but also more informal interaction in coffee breaks, poster sessions, and other events. We hope these arrangements will translate into a great experience for all attendees. Enjoy the conference!

Krzysztof Krawiec, GECCO 2021 General Chair
Poznan University of Technology, Poznań, Poland

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**Optimization of a simulation model
for a capacity and resource
planning task for hospitals under
special consideration of the COVID-
19 pandemic**

Thomas Bartz-Beielstein, *IDEA; Institute for Data Science,
Engineering, and Analytics*
Sowmya Chandrasekaran, *Technische Hochschule Köln*
Margarita Rebolledo Coy, *TH Köln, VU University Amsterdam*
Frederik Rehbach

**Real-World Multi-Objective
Optimization Competition**

Ponnuthurai Suganthan, *NTU*

**The AbstractSwarm Multi-Agent
Logistics Competition**

Daan Apeldoorn, *University Medical Center of the Johannes
Gutenberg University Mainz, IMBEI Medical Informatics*
Alexander Dockhorn, *Queen Mary University of London*
Lars Hadidi, *University Medical Center of the Johannes
Gutenberg University Mainz, IMBEI Medical Informatics*
Torsten Panholzer, *University Medical Center of the
Johannes Gutenberg University Mainz, IMBEI Medical
Informatics*

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AABOH — Analysing Algorithmic Behaviour of Optimisation Heuristics	Anna V Kononova, <i>LIACS, Leiden University</i> Hao Wang, <i>Leiden University</i> Thomas Weise, <i>Institute of Applied Optimization, School of Artificial Intelligence and Big Data, Hefei University</i> Carola Doerr, <i>CNRS and Sorbonne University</i> Thomas Bäck, <i>LIACS, Leiden University</i> Fabio Caraffini, <i>Institute of Artificial Intelligence, De Montfort University</i> Johann Dreao, <i>Pasteur Institute and CNRS</i>
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DTEO — 4th GECCO Workshop on Decomposition Techniques in Evolutionary Optimization	Bilel Derbel, <i>University of Lille</i> Ke Li, <i>University of Exeter</i> Xiaodong Li, <i>RMIT University</i> Saúl Zapotecas, <i>Autonomous Metropolitan University</i> Qingfu Zhang, <i>City University of Hong Kong</i>
EAHPC — Evolutionary Algorithms and HPC	Mark Coletti, <i>Oak Ridge National Laboratory</i> Robert Patton, <i>Oak Ridge National Laboratory</i> Catherine (Katie) Schuman, <i>Oak Ridge National Laboratory</i> Eric “Siggy” Scott, <i>MITRE</i> Kenneth De Jong, <i>George Mason University</i>
EAPWU — Evolutionary Algorithms for Problems with Uncertainty	Khulood Alyahya, <i>University of Exeter</i> Tinkle Chugh, <i>University of Exeter</i> Jürgen Branke, <i>University of Warwick</i> Jonathan Fieldsend, <i>University of Exeter</i>
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ECADA — 11th Workshop on Evolutionary Computation for the Automated Design of Algorithms	Daniel Tauritz, <i>Auburn University</i> John Woodward, <i>Queen Mary University of London</i> Manuel López-Ibáñez, <i>University of Málaga</i>

ECPERM — Evolutionary Computation for Permutation Problems	Valentino Santucci, <i>University for Foreigners of Perugia</i> Marco Baioletti, <i>University of Perugia</i> Josu Ceberio, <i>University of Basque Country</i> John McCall, <i>Robert Gordon University</i> Alfredo Milani, <i>University of Perugia</i>
EVOGRAPH — 2nd Workshop on Evolutionary Data Mining and Optimization over Graphs	Eneko Osaba, <i>TECNALIA</i> Javier Del Ser, <i>University of the Basque Country (UPV/EHU)</i> David Camacho, <i>Technical University of Madrid</i>
EVORL — Evolutionary Reinforcement Learning Workshop	Giuseppe Paolo, <i>Sorbonne Université - SoftbankRobotics Europe</i> Alex Coninx, <i>ISIR, Université Pierre et Marie Curie-Paris 6</i> Antoine Cully, <i>Imperial College London</i> Adam Gaier, <i>Autodesk Research</i>
EVOSOFT — Evolutionary Computation Software Systems	Stefan Wagner, <i>University of Applied Sciences Upper Austria</i> Michael Affenzeller, <i>University of Applied Sciences Upper Austria</i>
IAM — 6th Workshop on Industrial Applications of Metaheuristics	Silvino Fernández Alzueta, <i>Arcelormittal</i> Pablo Valledor Pellicer, <i>ArcelorMittal Global R&D</i> Thomas Stützle, <i>Université Libre de Bruxelles</i>
IWLCS — 24th International Workshop on Learning Classifier Systems	David Pätzelt, <i>University of Augsburg</i> Alexander Wagner, <i>University of Hohenheim</i> Michael Heider, <i>University of Augsburg</i>
LAHS — Landscape-Aware Heuristic Search	Nadarajen Veerapen, <i>University of Lille</i> Katherine Malan, <i>University of South Africa</i> Arnaud Liefoghe, <i>University of Lille</i> Sébastien Verel, <i>Univ. Littoral Côte d'Opale</i> Gabriela Ochoa, <i>University of Stirling</i>
NEWK — Neuroevolution at Work	Ernesto Tarantino, <i>Institute on High Performance Computing - National Research Council of Italy</i> De Falco Ivanoe, <i>Institute of High-Performance Computing and Networking (ICAR-CNR)</i> Della Cioppa Antonio, <i>Natural Computation Lab, DIEM, University of Salerno</i> Scafuri Umberto, <i>Institute of High-Performance Computing and Networking (ICAR-CNR)</i>
PDEIM — Parallel and Distributed Evolutionary Inspired Methods	Ernesto Tarantino, <i>Institute on High Performance Computing - National Research Council of Italy</i> De Falco Ivanoe, <i>Institute of High-Performance Computing and Networking (ICAR-CNR)</i> Della Cioppa Antonio, <i>Natural Computation Lab, DIEM, University of Salerno</i> Scafuri Umberto, <i>Institute of High-Performance Computing and Networking (ICAR-CNR)</i>

RWACMO — Real-World Applications of Continuous and Mixed-integer Optimization	Pramudita Palar, <i>Bandung Institute of Technology</i> Akira Oyama, <i>Institute of Space and Astronautical Science, Japan Aerospace Exploration Agency</i> Hemant Kumar Singh, <i>University of New South Wales</i> Kazuhisa Chiba, <i>The University of Electro-Communications</i>
SAEOPT — Surrogate-Assisted Evolutionary Optimisation	Alma Rahat, <i>Swansea University</i> Richard Everson, <i>University of Exeter</i> Jonathan Fieldsend, <i>University of Exeter</i> Handing Wang, <i>Xidian University</i> Yaochu Jin, <i>University of Surrey</i>
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SWINGA — Swarm Intelligence Algorithms: Foundations, Perspectives and Challenges	Roman Senkerik, <i>Tomas Bata University in Zlin, Faculty of Applied Informatics</i> Ivan Zelinka, <i>VSB - Technical University of Ostrava</i> Swagatam Das, <i>Indian Statistical Institute</i>
VIZGEC — Visualisation Methods in Genetic and Evolutionary Computation	David Walker, <i>University of Plymouth</i> Richard Everson, <i>University of Exeter</i> Rui Wang, <i>Uber AI</i> Neil Vaughan, <i>University of Exeter</i>

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