WEPO 2021

2nd Workshop on Evolutionary and Population-based Optimization

29-30 November 2021
Online Event
In conjunction with AIxIA 2021

*** FINAL Submission Deadline: October 15th, 2021 ***

https://wepo2021.aisylab.com

The workshop WEPO 2021 is intended to foster the discussion about Evolutionary Computation (EC) and Population-based Optimization (PO). Nature-inspired algorithms are largely used for solving optimization problems in a large number of fields due to their simplicity and effectiveness. The underlying principles behind these algorithms are simple enough to allow a great adaptability to various problems and domains and, while maintaining excellent effectiveness, they offer the possibility of obtaining explainable solutions. In a scenario where AI is increasingly predominant, but often with black box solutions, the explainability of EC and PO solutions may be an answer to the growing demand for understandable AI.
The goal of this workshop is to explore and discuss the latest trends, promising results and hot topics in the fields of EC and PO, offering a discussion forum where new research collaborations can be established.

The workshop is directed towards researchers, practitioners, and students that work on or are interested in evolutionary computation (EC) and population-based optimization (PO). Particular emphasis is given to recent advances in the use of EC and PO in the area of explainable AI.

Topics of Interest

The topics of the workshops include all the evolutionary computation methods and population-based optimization techniques, including, but not limited to:

- Genetic Algorithms
- Genetic Programming (tree-based, cartesian, graph-based, grammar-based, linear, semantic, and other kinds of GP)

- Evolution Strategies
- Differential Evolution
- Particle Swarm Optimization and other swarm intelligence methods
- Neuroevolution
- Evolutionary robotics
- Distributed methods in EC and swarm intelligence
- Multi-objective optimization in EC and swarm intelligence
- Cooperative and competitive evolution
- Fitness landscape analysis
- Applications of evolutionary algorithms to cyber-physical systems
- Real-world applications
- Software packages for population-based optimization methods (including implementations for HPC and GPU)

Both theoretical works, novel techniques, and application to real-world problems are on-topic for the workshop. A particular focus of this workshop is the relation between these methods and the larger area of AI, in particular how they can contribute to the development of an explainable AI and how they can be hybridized with other machine learning methods.

The aim of this workshop is to allow a direct and fruitful interaction between researchers, experts, and students interested in evolutionary and population-based optimization methods, and in the future of an explainable AI obtained via EC and PO methods. The workshop should be a place where researchers and students are able to present their recent works and to discuss their current ongoing research to obtain useful feedback.

Types of submission

WEPO 2021 welcomes three different kinds of submissions:

- *Research Papers (up to 12 pages).* Original and unpublished research works. The aim of this kind of paper is to disseminate to the community a complete research work.
- *Exploratory papers (up to 6 pages).* Shorter papers with preliminary results or in-progress works. The authors are encouraged to present the main open problems and novel ideas to allow a fruitful discussion that can help in improving the work. Exploratory papers are also a useful tool for students to start presenting their current research.
- *Proposal for software demos (2 pages short description).* It is well known that the software landscape for evolutionary computation and swarm intelligence is quite fragmented, with tools usually limited to single research groups. With a software demo, we want to encourage researchers to present their software, possibly helping other people in learning how to use it in their research. Authors are also encouraged to make available before the workshop a software repository with the code and examples used in the demo.

Notice that the page limit for each submission type *excludes* acknowledgements and bibliography.

Acceptance of the submitted work is given by the following criteria:

- *Research Papers.* Research papers will be evaluated based on the quality and innovation of the research work, the clarity of the exposition, and the relevance of the research to the audience of the workshop.
- *Exploratory papers.* The paper should contain enough information to allow an evaluation from the program committee, which will evaluate if the research is in scope for the workshop, if their paper is correct and contains no unfixable flaws, and the amount of research already performed is sufficient as a work-in-progress. While exploratory papers are still work in progress, the light review process will ensure that they can be presented and can allow the start of a fruitful discussion.
- *Proposal for software demos*: the software should be related to the topics of the workshop, the proposed demo should be of interest for the EC and PO community and the content of the demo should be of a reasonable length to be covered in the allotted time slot.

Submission Instructions

All submissions must be formatted according to Springer's LNCS style and must be submitted using the EasyChair submission system, specifying the WEPO track.

Publication

All accepted research and exploratory papers will be available in a local proceedings volume or, subject to confirmation, to CEUR-WS proceedings. All accepted software demos will be available in the local proceedings.

Authors of a selection of accepted papers will be invited to submit an extended and revised version for publication in an international journal (to be confirmed).

Important Dates

- Paper submission deadline (FINAL EXTENSION): ~~October 8th, 2021~~ October 15th (AoE).
- Notification to authors (extended): ~~November 8th, 2021~~ November 10th, 2021.
- Camera ready submission: November 22th, 2021.
- Workshop date: November 29th-30th, 2021.

Participation

The workshop will be held online, with a program expected to run for one day, before the main conference. The exact date (November 29th or 30th) will be announced later. Further information on the AIxIA conference, of which WEPO is part of, are available on the main AIxIA website.

Invited Speakers

WEPO 2021 will feature two invited talks by:

- Stjepan Picek, Delft University of Technology, Delft (NL)
- Sara Silva, Faculdade de Ciências, Universidade de Lisboa, Lisbon (PT)

Program Committee

- Stefano Cagnoni, Università di Parma, Parma (IT)
- Mauro Castelli, NOVA IMS, Universidade Nova de Lisboa, Lisbon (PT)
- Eric Medvet, Dipartimento di Ingegneria e Architettura, University of Trieste, Trieste (IT)
- Laura Nenzi, Università degli Studi di Trieste, Trieste (IT)
- Marco S. Nobile, Department of Industrial Engineering & Innovation Sciences - Eindhoven University of Technology (TU/e), Eindhoven (NL)
- Sara Silva, Faculdade de Ciências, Universidade de Lisboa, Lisbon (PT)
- Leonardo Trujillo, Departamento de Ingeniería en Electrónica y Eléctrica, Instituto Tecnológico de Tijuana, Tijuana (MX)
- Eva Tuba, Singidunum University, Belgrade (RS)
- Marco Virgolin, Centrum Wiskunde & Informatica, Amsterdam (NL)

Workshop Organizers

- Luca Manzoni, Università degli Studi di Trieste, Trieste (IT)
- Andrea De Lorenzo, Università degli Studi di Trieste, Trieste (IT)
- Luca Mariot, Delft University of Technology, Delft (NL)

Website

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