— Call for Papers ACM GECCO 2020 Workshop —
Green AI: Evolutionary and machine learning solutions in environment, renewable and ecologically-aware scenarios

in conjunction with **GECCO 2020**; Cancún, Mexico (online presentations), July 8th–12th 2020.

Organizers:
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URL: `https://greenai.inria.fr/gecco/`

> **Note:** Because of the COVID-19 disease the workshop will be hosted in a 100% remote mode. See `https://twitter.com/GeccoConf/status/1241131007195197440`.

It is our pleasure to invite you to the 2020 ACM GECCO Workshop **"Green AI: Evolutionary and machine learning solutions in environment, renewable and ecologically-aware scenarios"** to be held in conjunction with the 2020 Genetic and Evolutionary Computation Conference, in Cancún, Mexico, on July 8-12, 2020.

Artificial intelligence, machine learning, and computational intelligence methods are essential components of any renewable energy or ecologically conscious activity action. This is derived from the fact that to make renewable energies operational, efficient and viable it is necessary to model and/or optimize a myriad of complex phenomena and processes.

Recent advances in sensors, data management, and cloud computing are transforming the environment for operations managers in these industries. Large, rich datasets can be readily assembled from diverse sources with substantial computational power available for analytics.

This creates a fertile environment for the application of computational intelligence. Prediction, classification and optimization algorithms can support decision-makers in the management of highly expensive resources, where even small percentage cost reductions can amount to millions of dollars. The application of computational intelligence can be transformative, leading to large-scale efficiency and major changes in operations. There is, however, an area that has been neglected by researchers and industry: the ecological impact of artificial intelligence itself.

Only recently some light has been cast in this direction. On one hand, it has been forecast that by 2030 half of the world's electric energy consumption with be attributed to computing facilities. On the other hand, recent studies show the design and training of a state of the art machine learning models produced the same amount of CO_2 as six medium cars during their lifespan. This raises many concerns on how to make an ecologically-viable artificial intelligence.

In this direction, it has been hypothesized that cloud and mobile computing, transfer learning, domain adaptation, model reuse, active learning, and evolutionary computing, among others, could contribute to produce an eco-savvy AI. However, this is an area that needs yet to be properly explored both from theoretical and practical points of view.

There is a growing global interest in moving towards a digital transformation of the economy. This transformation is certainly needed but it should also take into account the ecological impact and viability. It is then the moment to focus on topics like these.

The objective of this workshop is to serve as a convergence hub for researchers and academics working on the application of evolutionary computing and machine learning to both the area of energy generation, production, and transformation with an ecologically-minded approach and the construction of eco-aware machine learning models and algorithms.

Topics of interest

We seek contributions on a range of topics related to this theme including but not limited to the following two main focus areas.

Applications papers, like those related to:

(i) evolutionary and optimization methods for ecology-aware and energy-aware artificial intelligence methods,

(ii) understanding and minimization of the ecological impact of computing,

(iii) renewable, wind, wave, and tidal energy production,

(iv) oil, gas or coal transition and hybrid energy models,

(v) predictive maintenance, and

(vi) logistics and supply chain optimization.

Relevant methods and techniques like:

(i) multi-component optimization,

(ii) simulation-optimization,

(iii) energy-aware AutoML approaches,

(iv) transfer learning and domain adaptation,

(v) probabilistic modeling with large real-world datasets, and

(vi) prediction, classification, and clustering with large real-world datasets.

Important dates

Dates have been updated as follows. Note that these dates are strict, no extensions will be granted:

Submission opening:	February 27, 2020
Submission deadline:	April 17, 2020 (UTC-12:00) **(strict!)**
Notification of acceptance:	May 1, 2020
Camera-ready material submission:	May 8, 2020
Author registration deadline:	May 11, 2020
GECCO conference (remote presentations):	July 8-12, 2020

Submissions

The following GECCO submission preparation and submission instructions should be followed:

Workshop papers must be submitted using the GECCO submission site (`https://ssl.linklings.net/conferences/gecco/`). After login, the authors need to select the "Workshop Paper" submission form. In the form, the authors must select the workshop they are submitting to. To see a sample of the "Workshop Paper" submission form go to GECCO's submission site and chose "Sample Submission Forms".

Submitted papers must not exceed 8 pages (excluding references) and are required to be in compliance with the GECCO 2020 Papers Submission Instructions. It is recommended to use the same templates as the papers submitted to the main tracks. It is not required to remove the author information if the workshop the paper is submitted to does not have a double-blind review process (please, check the workshop description or the workshop organizers on this).

All accepted papers will be presented at the corresponding workshop and appear in the GECCO Conference Companion Proceedings. By submitting a paper, the author(s) agree that, if their paper is accepted, they will:

- Submit a final, revised, camera-ready version to the publisher on or before the camera-ready deadline

- Register at least one author before April 27, 2020 to attend the conference

- Attend the conference (at least one author)

- Present the accepted paper at the conference

Visit `https://greenai.inria.fr/gecco/` for more information.