Applications of heuristics and metaheuristics in power systems

Wagan AI, Shaikh MM et al (2020) A new metaheuristic optimization algorithm inspired by human dynasties with an application to the wind turbine micrositing problem. Appl Soft Comput 90 (106):176 Wang GG, Deb S, Coelho LdS (2015) Elephant herding optimization.

In the power and energy systems area, a progressive increase of literature contributions containing applications of metaheuristic algorithms is occurring. In many cases, these applications are merely aimed at proposing the testing of an existing metaheuristic algorithm on a specific problem, claiming that the proposed method is better than other ...

Since 2006, DL has become a popular topic in machine learning. Its position in AI and data science has been shown in Fig. 2 [].DL techniques are superior to traditional ML algorithms due to data availability and systems processing power development [10, 11] smaller databases and simple applications, traditional ML algorithms perform better because they are ...

This book addresses the principles and applications of metaheuristic approaches in engineering and related fields. The first part covers metaheuristics tools and techniques such as ant colony optimization and Tabu search, and their applications to several classes of optimization problems.

This paper provides basic knowledge about most widely used (meta)heuristic optimization techniques, and their application in optimization problems in power systems. Discover the world"s research ...

This chapter describes a theoretical background and application of the meta-heuristic methods to the allocation of the renewable energy systems in the distribution network. Discover the world"s ...

Since no review targets Metaheuristics (MHs) in electric power system applications, our work provides a general panorama of the paradigms that underlay such applications: ...

Semantic Scholar extracted view of "Applications of Meta-heuristics in Renewable Energy Systems" by M. Kumawat et al. ... (PSO) algorithm has been engaged to carry out the LFC of the considered wind-biomass isolated hybrid power system and the FO-PID controller outperforms the conventional PID controllers. Expand. 38.

Applications of Heuristics and Metaheuristics in Power Systems - A Special Issue published by Hindawi. ... Applications of Heuristics and Metaheuristics in Power Systems. Publishing date. ...

Meta-heuristics are generic search methods that are used to solve challenging combinatorial problems. We describe these methods and highlight their common features and differences by grouping them in two main kinds of approaches: Perturbative meta-heuristics that build new combinations by modifying existing

combinations (such as, for example, genetic ...

Apppp ( )lications of (meta)heuristic methods in power systems Applications 1/36 Types of applications o Load assessment and profiling o Network reconfiguration o Rti l iReactive power p lanning o System security analysis o State estimation o Distributed generation any many others .... Load assessment and profiling Peak load estimation

Downloadable! In the power and energy systems area, a progressive increase of literature contributions that contain applications of metaheuristic algorithms is occurring. In many cases, these applications are merely aimed at proposing the testing of an existing metaheuristic algorithm on a specific problem, claiming that the proposed method is better than other ...

One of the contemporary fields of Artificial Intelligence is the field of metaheuristic algorithms--a scientific method to problem solving that extends the idea of heuristic algorithms, where "meta" denotes "beyond" or "on a higher level" [].According to [], a metaheuristic is "an iterative generation process which guides a subordinate heuristic by combining intelligently ...

Application to Power Systems . MIHAI GAVRILAS. Power System Department ... Thus, Sections 2 and 3 describe generic heuristic methods and metaheuristics. Then, Section 4 considers

Journal of Artificial Intelligence and Metaheuristics (JAIM) Vol. 03, No. 01, PP. 21-30, 2023 ... Meta heuristic; Optimization; feature ... widespread application in a variety of fields for the ...

In such applications, the batteries cannot store all the produced renewable energy. Fuel cell systems offer an alternative solution to store this energy and other benefits. These systems are mainly composed of electrolyzers and fuel cells [17,18]. The electrolyzer splits the water into oxygen and hydrogen using generated renewable power.

Heuristic optimization algorithms are well-known for their success in handling challenging optimization issues. ... The article extensively explores the applications of these algorithms in diverse domains such as engineering, finance, logistics, and computer science. It underscores particular instances where metaheuristic algorithms have found ...

Applications of Heuristics and Metaheuristics in Power Systems Ruben Romero, Edgar M. C. Franco, Massoud Rashidinejad; Affiliations Ruben Romero University of the State of São ...

1.4 Applications of IoT System-Based Metaheuristics. IoT-based metaheuristics have the potential to transform various fields by enabling more efficient and effective decision-making processes. One of the most significant applications ...

Applications of heuristics and metaheuristics in power systems

This paper provides basic knowledge about most widely used (meta)heuristic optimization techniques, and their application in optimization problems in power systems. The development of modern wide-area power systems, as well as recent trends towards the creation of sustainable energy systems have given birth to complex studies addressing technical, but ...

applications in the power and energy systems domain, in which hundreds of papers that are based on the use of metaheuristics for solving optimization problems have been published. The specific ...

This paper considers the applications to power and energy systems and aims at providing a comprehensive view of the main issues that concern the use of metaheuristics for global optimization problems, including a set of underlying principles that characterize the metaheuristic algorithms. Expand

The paper presents a new algorithm for optimising the modes of power system, taking into account losses in networks and functional constraints in the form of inequalities on power flows of ...

First, review and scope of different IoT base applications of meta-heuristic algorithms have been discussed. In the second fold, some existing IoT systems with meta-heuristic based algorithms have been documented. Furthermore, from the investigated studies some description of research questions has been included. Finally, this paper reviews and ...

This "rush to heuristics" does not happen in the evolutionary computation domain, where the rules for setting up rigorous comparisons are stricter but are typical of the domains of application of the metaheuristics. This paper considers the applications to power and energy systems and aims at providing a comprehensive view of the main ...

Optimization of power systems operation. ... Interestingly no agreed definitions of heuristics and metaheuristics exist in literature, some use "heuristics" and "metaheuristics" interchangeably. ... in Applications of Artificial intelligence Techniques in Engineering, Advances in Intelligent Systems and Computing, vol. 697 (2018), pp ...

This short note deals with the future prospect of meta-heuristics method in power system. Previously, the classical methods are such as lambda iteration, Newton"s method, gradient ...

Optimization techniques have developed into a significant area concerning industrial, economics, business, and financial systems. With the development of engineering and financial systems, modern optimization has played an important role in service-centered operations and as such has attracted more attention to this field. Meta-heuristic hybrid ...

In the area of optimization, metaheuristic algorithms have attracted a lot of interest. For many centuries, human beings have utilized metaheuristic algorithms as a problem-solving approach. The application of these

methods to combinatorial optimization problems has rapidly become a growing area of research, incorporating principles of natural selection, evolution, and problem ...

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