Research Direction of Genetic Algorithm for Microgrid

Can AI drive day-ahead optimal scheduling for a grid-connected AC microgrid?

This paper presents an AI-driven day-ahead optimal scheduling approach for a grid-connected AC microgrid with a solar panel and a battery energy storage system. Genetic Algorithm generates demand response strategies and optimizes battery dispatch, while LightGBM forecasts solar power generation and building load consumption.

What is the optimal scheduling methodology for Microgrid?

An optimal scheduling methodology for MG considering uncertain parameters is proposed along with the existence of an energy storage system. The remaining paper is organised as follows: In Sect. "Optimal operation of microgrid", the optimal operation of MG is discussed.

Can AI optimize a grid-connected AC microgrid?

However, optimizing microgrid operation faces challenges from the intermittent nature of renewable sources, dynamic energy demand, and varying grid electricity prices. This paper presents an AI-driven day-ahead optimal scheduling approach for a grid-connected AC microgrid with a solar panel and a battery energy storage system.

What are the deterministic algorithms used in microgrids?

Deterministic algorithms like linear programming,mixed-integer linear programming,and dynamic programminghave been used in articles 9,10,11,12,13,14,15 for unit commitment and economic load dispatch (ELD) of microgrids with or without the energy storage system.

What is a multiobjective genetic algorithm?

Optimal management and planning of microgrids (MG) are the most important goals for operators. In this study, a Multiobjective Genetic Algorithm (MOGA) is applied to the technical and economic problems of the MG. This stochastic programming considers demand response (DR) programs, reactive loads, and uncertainties due to renewable energies.

How to solve a multi-objective problem in a microgrid?

This multi-objective problem is solved by using the genetic algorithm (GA). Therefore,the main contributions of this paper are summarized as follows: The use of reactive loads to provide the required reserve as well as consideration of GHG emissions in optimal energy planning and management of the microgrid.

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This study proposes an Optimal Power Flow Management (OPFM) strategy for a grid-connected hybrid Micro

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Grid (MG) comprising a wind turbine (WT), a photovoltaic (PV) field, a storage battery, and a Micro Gas ...

According to the microgrid which contains a variety of distributed generations, a Multi-objective optimal dispatching model for microgrid is proposed. These objectives include the operation ...

With the development of microgrid, more and more scholars have participated in the optimization research of microgrid power flow. This article mainly summarizes the ...

In this research, the microgrid system incorporated renewable solar and wind energy resources; the converter and the permanent magnet synchronous generator function ...

In the process of optimisation, this study introduces the structure of a double chain and the adjustment strategy of the dynamical rotation angle, proposes a new modified ...

Recent research and literature explore the use of intelligent algorithms to minimize operational costs in microgrids (Wang et al., 2020).Popular algorithms include Genetic Algorithm (GA), ...

Fault current magnitude in a microgrid depends upon its mode of operation, namely, grid-connected mode or islanded mode. Depending on the type of fault in a given ...

This paper presents a modification in the selection process of a genetic algorithm for the unit commitment of a grid-connected microgrid that consists of prosumers and consumers, ...

The Genetic algorithm is described mathematically. ... into the power system to achieve efficient use of clean energy and stable operation of the system will be an important ...

In this paper, multi objective genetic algorithm-based energy management system is formulated for microgrid network considering optimal utilization of grid power and ...

This paper presents an AI-driven day-ahead optimal scheduling approach for a grid-connected AC microgrid with a solar panel and a battery energy storage system. Genetic ...

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A modified genetic algorithm has been used in article 18 to share the power generation among the various DERs optimally. The results show that the modified GA gives better results than the GA.

Genetic algorithm was already mentioned earlier in this paper because authors often combine different algorithms for different parts of the problem like in [68] where it was ...

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