Abstract

Maintenance of the photovoltaic (PV) systems is a very important task for improving their performance. Many parameters affect the PV operation such as the environmental conditions, panel's size and direction. These nonlinear parameters cause NP-hard problem that is represented as a very complex task to be solved. Researchers have developed many traditional systems to deal with these problems. But, there is a little work concerns the automation of the event maintenance appeared at the trouble environmental conditions. The proposed system introduces a new intelligent case based system that can use the fuzzy logic representation to deal with the uncertain and unknown values represented the case in the case library of the PV systems. Besides, the case based system uses the genetic algorithm optimization technique to overcome the complexity of the adaptation problem. The proposed system is a general purpose system that can be used in different CBR systems. It has been applied for different event maintenance process of a PV system. Its obtained results have proved its good performance compared to present methods for the maintenance process of the PV systems.
References

Index Terms

Computer Science

Applied Sciences

Keywords

Case based reasoning, Fuzzy logic, Genetic algorithm, Photovoltaic system, and Maintenance process.