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Contents

Solar Cell Parameter Extraction by Using Harris Hawks Optimization Algorithm

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Abstract Solar energy is growing faster in this modern era. Many researchers have been attracted towards the research on solar energy because it is a clean source of energy. Mostly two problems are occurred to generate energy from this source: (a) having a beneficial model to characterize solar cells and (b) very less available information about PV cells. Due to these issues, PV module performance affected. In order to extract the parameters of the PV cells and modules, numerous algorithms have been suggested. Many of them often fail to find the best solutions. In this chapter, an application of Harris hawks optimization (HHO) algorithm is reported to extract solar cell parameters. The wide applicability of this algorithm has already been examined over different conventional benchmark functions and on some real problem. This fact motivated authors to implement this algorithm on parameter extraction problem. The main motivation behind the implementation of HHO on solar cell parameter extraction is the efficacy of this algorithm to deal with complex optimization problems. Results of HHO are compared with other well-known algorithm results which shows that HHO produces better results.

Keywords Solar cell parameter extraction · Single-diode model · Double-diode model · Harris hawks optimization

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