

An Application Barnacles Mating Optimizer for Forecasting of Full Load Electrical Power Output

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Abstract:

The application of meta-heuristic algorithms in addressing numerous real-world problems have been proven to be effective. This application has widespread use in different fields including electrical engineering. In this study, a rather new meta-heuristic algorithm is employed in full load electrical power output forecasting viz. Barnacles Mating Optimizer (BMO). Forecasting of full load electrical power output is critical in maximizing the profit from the provided megawatt hours. For this matter, the simulation involved 4 independent variables which includes ambient temperature, atmospheric pressure, relative humidity and vacuum while the output is the hourly full load electrical power output of the plant. The inputs are fed into the BMO algorithm which acts as a forecasting model. The performance of BMO is later compared against two comparable meta-heuristic algorithms namely Grey Wolf Optimizer (GWO) and Moth-flame Optimizer (MFO). Upon completing the simulation, the produced results showed that the BMO is able to produce significantly lower error rates compared to GWO and MFO.

Keywords: Barnacles Mating Optimizer; Grey Wolf Optimizer; Load Forecasting; Meta-Heuristic; Moth-Flame Optimizer.

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