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Multi-layer perceptron hybrid model integrated with the firefly optimizer algorithm for windspeed prediction of target site using a limited set of neighboring reference station data

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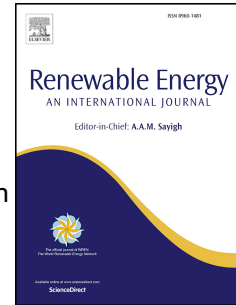
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1 **Multi-layer perceptron hybrid model integrated with the firefly**
2 **optimizer algorithm for windspeed prediction of target site using a**
3 **limited set of neighboring reference station data**

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16 **Abstract**

17 Long-term windspeed prediction is crucial for establishing the viability of wind as a clean energy
18 option, including the selection of wind farm locations, feasibility studies on energy potential and the
19 operation of wind energy conversion systems with minimal investment risk. To deliver this vital
20 societal need, data-inexpensive artificial intelligence models relying on historical inputs can be a useful
21 scientific contrivance by energy analysts, engineers and climate-policy advocates. In this paper, a novel
22 approach is adopted to construct a multilayer perceptron (MLP) hybrid model integrated with the
23 Firefly Optimizer algorithm (MLP-FFA) trained with a limited set of historical (monthly) data (2004–
24 2014) for a group of neighboring stations to predict windspeed at target sites in north-west Iran.

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