Horizontal Extrapolation of Wind Speed Distribution Using Neural Network for Wind Resource Assessment

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Résumé en anglais	To evaluate the wind potential on a site for future wind energy project, an accurate representation of the wind speed distribution is required. However, due to the lack of observations, wind engineers are conducted to use some statistical tools to estimate the characteristics of wind by the measurements from a nearby reference or data obtained from a short period. In this work, we aim at applying an information processing paradigm that is inspired by biological neurons, formal neurons, for the assessment of wind speed distribution. Two different learning algorithms are used so as to generate Artificial Neural Network with one hidden layer. Results prove that learning by means of Bayesian regularization, in comparison with Levenberg–Marquardt learning algorithm, gives the best performance. In addition, the proposed network allows significant results in horizontal wind extrapolation.
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