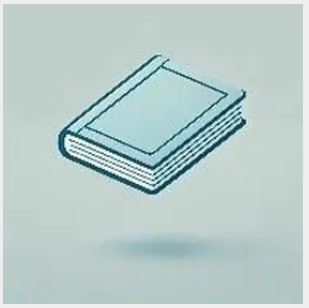
Shishegaran / Rabczuk / Saeedi

New Machine Learning Methods for the Sustainable Development Goals



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This book is a collection of new artificial intelligence (AI) methods, including new regression, machine learning, deep learning, hybrid, and ensemble models, published in recent years. The algorithms and structures of these methods are clearly explained so that readers can use them in their studies and projects. In addition, by presenting several examples of models, the strengths and weaknesses of each model are explained to help readers select the best model for each kind of dataset. Therefore, readers can purposefully and usefully select the appropriate models among all options. As a result, the first advantage of this book in comparison to other books is its presentation of new AI models in detail, comparing their capabilities and features, and an overview of some criteria to select the appropriate model for various datasets. Moreover, this book provides the required information on sustainable development, which students need to know, as well as advanced information and details for using new AI approaches for sustainable development goals. To improve the criteria of sustainable development, managing the current and future situation is one the most important factors and needs the prediction approaches for the future; for example, environmental indicators like the management of air pollution, climate change, waste, and energy consumption. Sustainability also involves other variables, such as social, technical, and economic indicators, which new AI can efficiently manage. Furthermore, new AI can increase the number of models and involve more indicators in multi-criteria decision analysis. Therefore, the accuracy of this type of analyses to have a sustainable production and development can improve through an increase in the number of options and indicators, while the cost and time of analyses will be decreased using the AI methods. This book provides many new, stronger AI approaches for the various studies in sustainable development that will be of interest to researchers and students.

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