

1. Record Nr.	UNINA9910484394403321
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Titolo	Deep Learning for Hydrometeorology and Environmental Science // by Taesam Lee, Vijay P. Singh, Kyung Hwa Cho
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2021
ISBN	3-030-64777-3
Edizione	[1st ed. 2021.]
Descrizione fisica	1 online resource (xiv, 204 pages) : illustrations, maps
Collana	Water Science and Technology Library, , 1872-4663 ; ; 99
Disciplina	006.31
Soggetti	Water Hydrology Artificial intelligence Environmental sciences - Mathematics Ecology Neural networks (Computer science) Human ecology - Study and teaching Artificial Intelligence Mathematical Applications in Environmental Science Environmental Sciences Mathematical Models of Cognitive Processes and Neural Networks Environmental Studies
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Mathematical Background -- Data Preprocessing -- Neural Network -- Training a Neural Network -- Updating Weights -- Improving model performance -- Advanced Neural Network Algorithms -- Deep learning for time series -- Deep learning for spatial datasets -- Tensorflow and Keras Programming for Deep Learning -- Hydrometeorological Applications of deep learning -- Environmental Applications of deep learning.
Sommario/riassunto	This book provides a step-by-step methodology and derivation of deep learning algorithms as Long Short-Term Memory (LSTM) and Convolution Neural Network (CNN), especially for estimating

parameters, with back-propagation as well as examples with real datasets of hydrometeorology (e.g. streamflow and temperature) and environmental science (e.g. water quality). Deep learning is known as part of machine learning methodology based on the artificial neural network. Increasing data availability and computing power enhance applications of deep learning to hydrometeorological and environmental fields. However, books that specifically focus on applications to these fields are limited. Most of deep learning books demonstrate theoretical backgrounds and mathematics. However, examples with real data and step-by-step explanations to understand the algorithms in hydrometeorology and environmental science are very rare. This book focuses on the explanation of deep learning techniques and their applications to hydrometeorological and environmental studies with real hydrological and environmental data. This book covers the major deep learning algorithms as Long Short-Term Memory (LSTM) and Convolution Neural Network (CNN) as well as the conventional artificial neural network model.
