



1st ed. 2020, XXVIII, 284 p. 143 illus., 91 illus. in color.

Printed book

Hardcover

109,99 € | £99.99 | \$139.99

^[1]117,69 € (D) | 120,99 € (A) | CHF 130,00

eBook

91,62 € | £79.50 | \$109.00

^[2]91,62 € (D) | 91,62 € (A) | CHF 104,00

Available from your library or
[springer.com/shop](https://www.springer.com/shop)

MyCopy ^[3]

Printed eBook for just

€ | \$ 24.99

[springer.com/mycopy](https://www.springer.com/mycopy)

Jean-Pierre Briot, Gaëtan Hadjeres, François-David Pachet

Deep Learning Techniques for Music Generation

Series: Computational Synthesis and Creative Systems

- Authors' analysis based on five dimensions: objective, representation, architecture, challenge, and strategy
- Important application of deep learning, for AI researchers and composers
- Research was conducted within the EU Flow Machines project

This book is a survey and analysis of how deep learning can be used to generate musical content. The authors offer a comprehensive presentation of the foundations of deep learning techniques for music generation. They also develop a conceptual framework used to classify and analyze various types of architecture, encoding models, generation strategies, and ways to control the generation. The five dimensions of this framework are: objective (the kind of musical content to be generated, e.g., melody, accompaniment); representation (the musical elements to be considered and how to encode them, e.g., chord, silence, piano roll, one-hot encoding); architecture (the structure organizing neurons, their connections, and the flow of their activations, e.g., feedforward, recurrent, variational autoencoder); challenge (the desired properties and issues, e.g., variability, incrementality, adaptability); and strategy (the way to model and control the process of generation, e.g., single-step feedforward, iterative feedforward, decoder feedforward, sampling). To illustrate the possible design decisions and to allow comparison and correlation analysis they analyze and classify more than 40 systems, and they discuss important open challenges such as interactivity, originality, and structure. The authors have extensive knowledge and experience in all related research, technical, performance, and business aspects. The book is suitable for students, practitioners, and researchers in the artificial intelligence, machine learning, and music creation domains. The reader does not require any prior knowledge about artificial neural networks, deep learning, or computer music.

Order online at [springer.com](https://www.springer.com) / or for the Americas call (toll free) 1-800-SPRINGER / or email us at: customerservice@springernature.com. / For outside the Americas call +49 (0) 6221-345-4301 / or email us at: customerservice@springernature.com.

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with [1] include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with [2] include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted. [3] No discount for MyCopy.

