1.	Record Nr.	UNISA996466844903316
	Autore	Banerjee Santo <1976->
	Titolo	Fractal functions, dimensions and signal analysis / / Santo Banerjee, D. Easwaramoorthy, A. Gowrisankar
	Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
	ISBN	3-030-62672-5
	Edizione	[1st ed. 2021.]
	Descrizione fisica	1 online resource (X, 132 p. 61 illus., 59 illus. in color.)
	Collana	Understanding Complex Systems, , 1860-0832
	Disciplina	511.42
	Soggetti	Interpolation
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Chapter 1. Mathematical background of deterministic fractals -- Chapter 2. Fractal functions.-Chapter 3. Fractional calculus and generalized fractal functions -- Chapter 4. Signal Analysis -- Chapter 5. Multifractal and wavelet based signal analysis.
	Sommario/riassunto	This book introduces the fractal interpolation functions (FIFs) in approximation theory to the readers and the concerned researchers in advanced level. FIFs can be used to precisely reconstruct the naturally occurring functions when compared with the classical interpolants. The book focuses on the construction of fractals in metric space through various iterated function systems. It begins by providing the Mathematical background behind the fractal interpolation functions with its graphical representations and then introduces the fractional integral and fractional derivative on fractal functions in various scenarios. Further, the existence of the fractal interpolation function with the countable iterated function system is demonstrated by taking suitable monotone and bounded sequences. It also covers the dimension of fractal functions and investigates the relationship between the fractal dimension and the fractional order of fractal interpolation functions. Moreover, this book explores the idea of fractal interpolation in the reconstruction scheme of illustrative waveforms and discusses the problems of identification of the characterizing parameters. In the application section, this research compendium addresses the signal processing and its Mathematical methodologies. A

wavelet-based denoising method for the recovery of electroencephalogram (EEG) signals contaminated by nonstationary noises is presented, and the author investigates the recognition of healthy, epileptic EEG and cardiac ECG signals using multifractal measures. This book is intended for professionals in the field of Mathematics, Physics and Computer Science, helping them broaden their understanding of fractal functions and dimensions, while also providing the illustrative experimental applications for researchers in biomedicine and neuroscience.