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Autore	Banerjee Santo
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Altri autori (Persone)	GowrisankarA EaswaramoorthyD NandhiniS ManimaranA
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Nota di contenuto	A comparison of linear fractal interpolants in data fitting problems -- Affine Fractal Interpolation Functions for Seismic Data Reconstruction -- Approximation of Chaotic Signals using Quadratic and Cubic Fractal Interpolation Functions -- Exploring Fractal Patterns with R -- Alternated L-system Fractals -- Foundations and applications of mutual multifractal analysis: A review -- On the relative vectorial multifractal analysis of fractal measures -- Analyzing the Multifractality of River Stage Records for Three South Indian River basins using

Detrended fluctuation Principles -- Fractal Nambu Mechanics: Extending Dynamics with Fractal Calculus -- An appraisal on the fractal dimension of a neoteric continuous function of unbounded variation and its (k,s)-Riemann-Liouville fractional integral -- An Approximation Technique for Fractional-order Dynamical Systems of Complex Orders -- Solving Delay Differential Equations in Dynamical Systems Using Galerkin Weighted Residual Method and its Residual Error Correction with Various Polynomials -- MHD Casson Stream and Thermal Characteristics in a Semi-Permeable Channel with Cu-H₂O Nanofluid -- Dynamics and bifurcation analysis of a Crowley-Martin Eco-epidemiological model with prey refuge and impact of fear -- Bifurcation and optimal control analysis of fractal fractional order Soil-plant interaction model -- Chebyshev Collocation Method for Pantograph Delay Differential Equations with Linear Functional Arguments -- An outlook on switched coupled fractional differential system of -Hilfer type with multipoint integral boundary conditions -- Finite-Time Stability and Finite-Time Contractive Stability for Fractional-Order Neural Networks with Impulsive Adaptive Control -- Numerical Solution of Pantograph-type Delay Differential Equation in Fuzzy form using Hermite Wavelet Technique -- Crank-Nicolson scheme for singularly perturbed delay differential equation with a discontinuous source term -- Neural Network in Elliptic Curve Cryptography -- Forecasting Water Quality Index in Gurugram city, Haryana, India with Artificial Neural Networks and Multiple Linear Regression -- Path Following for A Mobile Robot Based on A Custom Convolution Neural Network -- Energy Prediction and Optimizing Model for Smart Home with Parallel Machine Learning Techniques -- Breast Cancer Classification Using Histopathological Images -- Ensemble feature selection using Dual Hesitant fuzzy Einstein aggregation operators -- Ensemble feature selection : A rank aggregation technique using Bonferroni Logarithmic induced ordered weighted averaging operator -- A New Numerical Algorithm to Compute a Root of Non-linear Equations using Exponential Method -- A Branch and Bound Algorithm to Solve Travelling Salesman Problem with Interval Valued Intuitionistic Fuzzy Parameters -- IMPACT OF FEAR ON CROWLEY-MARTIN ECO-EPIDEMIOLOGICAL MODEL WITH HARVESTING -- Solving Fuzzy Fractional HIV Model Using Fuzzy Fractional Fourth Order Runge-Kutta Method on Centroidal Mean -- Fixed point and common fixed point results on double controlled metric type space with a A₁ contraction -- Some Convergence Results for CUIA Iterative Scheme in Partially Ordered Hyperbolic Metric Spaces -- Best proximity point theorems in topological vector spaces -- Locally contractive conditions involving control functions in bi-complex valued metric spaces -- Coupled fixed point theorems in orthogonal sets -- Study of NV center based bulk diamond with different vibrational planes of dipole emitter -- Tuning the Electromagnetically Induced Transparency in Three Level and Four Level Atomic Systems -- Modeling Gravitational Potential of a Uniform Solid Cylinder at any Point Outside the Mass -- Bifurcation of ion-acoustic waves in Venus' lower ionosphere -- Teaching and Learning of Fractional-order Circuits in Advanced Electrical Circuit Analysis Laboratory.

Sommario/riassunto

This book presents selected, peer-reviewed contributions from the International Symposium on Mathematical Analysis of Fractals and Dynamical Systems - 2023 (ISMAFDS - 2023), held at the Department of Mathematics, School of Advanced Sciences, Vellore Institute of Technology, Tamil Nadu in India during August 24-25, 2023. It offers readers an array of captivating connections between fractal theory and

nonlinear dynamics across various physics sub-domains and mathematical modeling. Fractal geometry has been developed to describe irregular natural objects that defy characterization using Euclidean geometry. Fractal techniques, such as fractal dimension and fractal functions, prove effective in mathematically modeling real-world phenomena and forecasting future consequences. The impact of fractal theory on physical sciences is widely recognized, as natural phenomena frequently exhibit fractal structures. These new concepts revolutionize our understanding of the large-scale properties of matter distribution in the universe. The book aims to familiarize readers with recent developments in common fractal patterns found in statistical physics, quantum physics, and plasma physics. Furthermore, it highlights the relationship between fractals and nonlinear dynamics through innovative approaches in mathematical modeling. This publication caters to professionals in mathematics, physics, and computer science, and also serves as a helpful resource for non-specialists seeking to comprehend fractal and nonlinear dynamics concepts. It offers valuable applications for researchers in both pure and applied backgrounds of physics and engineering.
