

Biological Phenomena in Nonlinear Dynamics

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PERSPECTIVE

Nonlinear dynamics has modified as the many biological phenomena's e.g., existence of client species competitor for identical resource, biological pattern formation; e.g., clump and differentiation of mesenchymal cells throughout pre-cartilage mesenchymal condensation in chick limb chondrogenesis (bone patterning and formation) and analysis of vital sign variability in healthy further as morbid subjects to call many. The range of disciplines and successes of approaches supported non-linear dynamics, quality theory, and systems biology in breakdown many tough problems and respondent some outstanding queries in recent years crystal rectifier to the thought of aggregation a special volume on the topic.

This special issue is devoted to nonlinear phenomena in biology and drugs. The analysis papers that seem during this issue may be classified into 2 categories: papers which debate approaches to nonlinear statistical analysis supported high-powered systems theory et al that gift models and their potential application to human behaviour, biology and drugs.

In this issue, attention of researchers in neurobiology to the chance that action and perception may be understood in terms of decrease of a free energy surface useful that minimizes "sensory surprise". Free energy is Associate in nursing data conjectural live that bounds the surprise on sampling knowledge, given a generative model. Authors compare 2 totally different approaches to explain agent action and prediction supported the free energy principle and best management reinforcement learning. Within the 1st case, Associate in nursing agent's behaviours is controlled by a free energy surface useful that minimizes "sensory surprise" on the mechanical phenomenon within the space of a unfreeze system with sturdy fluctuations. The mathematical definition of surprise is conditional entropy. Within the last case, Associate in Nursing agent's adaptation behaviour is set so as to maximise a present.

Epilepsy is that the principal brain pathology that affects concerning I Chronicles world population and has necessary public health implication. The standard signal analysis strategies like the count of focal spike density, the frequency coherence, or spectral analyses don't seem to be reliable predictors. During this issue the paper describes a technique supported form dimension as a principal tool to diagnose brain disorder. Their technique combines freelance element formula with averaging filter at the pre-processing step.

The authors show that this improved technique can be accustomed analyze graphical record signals to diagnose brain disorder and therefore the applications of linear and nonlinear indexes in vital sign variability and show however these indexes ar helpful in clinical apply victimisation knowledge from patients.

Application of Mark off process models in conjunction with SSA isn't new. The fascinating a part of the paper is that the author has with success utilized this technique to morbidly and whooping cough epidemic statistic knowledge from sixty Britain cities.

Simulation model to grasp unfold and management of lesions supported a tabular graph illustration for the central system. The author demonstrates that the model is capable of generating a large style of lesion growth and arrest situations.

Non linear deformations of cells throughout micropipette aspiration procedure to live its elastic properties. The paper examines a model for micropipette aspiration. A fillet radius is taken into account at the gap of the micropipette to review its result on the sculpturesque response of the cell. The authors estimate best parameters of the model from the experimental somatic cell knowledge. Their findings recommend that the sponginess and bulk relaxation/fluid flow play a big role within the deformation behaviour of single cells and will be taken into consideration within the analysis of the mechanics of cells.

Examine the elemental nature of the brain electrical activities recorded as encephalogram (EEG). Linear random models and spectral estimates are the foremost common strategies for the analysis of graphical record attributable to their lustiness, simplicity of interpretation, and apparent association with metrical behavioural patterns in nature. The paper extends the applying of higher-order spectrum so as to clarify the hidden characteristics of graphical record signals that merely don't arise of random processes. This paper demonstrates the suitability of spectral analysis to tell apart chaotic systems from filtered noises and traditional background graphical record activity.

In sum, we have a tendency to note that these contributions gift state of the art of their various sub disciplines. The analysis papers showing during this special issue can function a guide to what's however to follow during this fascinating field of biology and drugs. Procedures arranged down may be combined to style a protocol for the medicine of epileptic disorders. We have a tendency to hope that this volume can serve interests of researchers operating within the field of applied biology and drugs.

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