

Article

A New Visualisation and Analysis Method for a Convolved Representation of Mass Computational Experiments with Biological Models

Alexandra I. Klimenko ^{1,2,3,*}, Diana A. Vorobeva ^{3,†} and Sergey A. Lashin ^{1,2,4}

¹ Systems Biology Department, Institute of Cytology and Genetics, Siberian Branch of the Russian Academy of Science, Lavrentiev Avenue 10, 630090 Novosibirsk, Russia

² Kurchatov Genomics Center, Institute of Cytology and Genetics, Siberian Branch of the Russian Academy of Science, Lavrentiev Avenue 10, 630090 Novosibirsk, Russia

³ Mathematics and Mechanics Department, Novosibirsk State University, Pirogova St. 1, 630090 Novosibirsk, Russia

⁴ Natural Science Department, Novosibirsk State University, Pirogova St. 1, 630090 Novosibirsk, Russia

* Correspondence: klimenko@bionet.nsc.ru

† Equal contribution

Abstract: Modern computational biology makes widespread use of mathematical models of biological systems, in particular systems of ordinary differential equations, as well as models of dynamic systems described in other formalisms, such as agent-based models. Parameters are numerical values of quantities reflecting certain properties of a modeled system and affecting model solutions. At the same time, depending on parameter values, different dynamic regimes - stationary, oscillatory, established as a result of transient modes of various types - can be implemented in the system. Predicting changes in the solution dynamics type depending on changes of model parameters is an important scientific task. Nevertheless, this problem does not have an analytical solution for all formalisms in a general case. The routinely used method of performing a series of computational experiments, i.e. solving a series of direct problems with various sets of parameters followed by expert analysis of solution plots is labor-intensive with a large number of parameters and a decreasing step of the parametric grid. In this regard, the development of methods allowing to obtain and analyze information on a set of computational experiments in an aggregate form is relevant. This work is devoted to developing a method for visualization and classification of various dynamic regimes of a model using a composition of the dynamic time warping (DTW-algorithm) and principal coordinates analysis (PCoA) methods. This method allows to obtain a qualitative visualisation of the results of the set of solutions of a mathematical model and to carry out the correspondence between the values of the model parameters and the type of dynamic regimes of its solutions. This method has been tested on the Lotka-Volterra model and artificial sets of various dynamics.

Keywords: visualization; dynamic regime; mathematical model; dynamic time warping; computational experiment

1. Introduction

Modern computational biology is using mathematical models of biological systems, in particular systems of ordinary differential equations (ODE) [1–3] and partial differential equations (PDE) [3,4], as well as models of dynamic systems described in other formalisms, such as agent-based models [5–10], Boolean networks [11,12] and cellular automata [13,14]. Parameters are numerical values of quantities reflecting certain properties of a modeled system and affecting model solutions. At the same time, depending on the parameter values, different dynamic modes - nonstationary, oscillatory,

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Life-Cycle Performance of Structures and Infrastructure Systems in Diverse Environments Chun-Qing Li, Dan M. Frangopol, 2025-07-14 Life Cycle Performance of Structures and Infrastructure Systems in Diverse Environments contains the lectures and papers presented at the Ninth International Symposium on Life Cycle Civil Engineering IALCCE 2025 Melbourne Australia 15-19 July 2025 This book includes the full papers of 228 contributions presented at IALCCE 2025 including the Fazlur R Khan Lecture seven Keynote Lectures and 220 technical papers The papers cover recent advances and cutting edge research in the field of life cycle civil engineering including emerging concepts new theories and innovative applications related to life cycle design assessment inspection monitoring repair maintenance rehabilitation and management of structures and infrastructure systems under uncertainty Major topics covered include life cycle carbon assessment of civil infrastructure systems life cycle design and assessment for structures and infrastructure systems life cycle management of civil infrastructure whole life costing life cycle risk analysis and optimization of civil infrastructure and life cycle digital tools for civil engineering among others This open access book provides both an up to date overview of the field of life cycle civil engineering and significant contributions to the process of making more rational decisions to mitigate the life cycle risk and improve the life cycle safety reliability resilience and sustainability of structures and infrastructure systems exposed to diverse environments in a changing climate for the purpose of enhancing the welfare of society It will serve as a valuable reference to all concerned with life cycle of civil engineering systems including students researchers practitioners consultants contractors decision makers and representatives of managing bodies and public authorities from all branches of civil engineering

Federal Register, 2003-11 *Large-scale and High Performance Computations of Complex Turbulent Reacting Flows* Asghar Afshari, 2006

Energy and Water Development Appropriations for 2016 United States. Congress. House. Committee on Appropriations. Subcommittee on Energy and Water Development, 2015

Mathematical Reviews, 2005

11th International Symposium on High Performance Distributed Computing, 2002 Forty two full papers from the July 2002 conference in Edinburgh discuss data servers and

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Proceedings of the ... IEEE International Symposium on High Performance Distributed Computing ,2003

X-Ray Absorption Fine Structure -- XAFS13 Britt Hedman,Piero Pianetta,2007-03-09 Stanford California USA 9 14 July 2006

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AMSTAT News ,2005

Proceedings of the 2003 ACM SIGCOMM Internet Measurement Conference ,2003 Internet Service Providers ISPs can exploit path diversity to balance load and improve robustness Unfortunately it is difficult to evaluate the potential impact of these approaches without routing and topological data which are confidential In this paper we characterize path diversity in the real Sprint network We then characterize path diversity in ISP topologies inferred using the Rocketfuel tool Comparing the real Sprint topology to the one inferred by Rocketfuel we find that the Rocketfuel topology has significantly higher apparent path diversity As a metric path diversity is particularly sensitive to the presence of false or missing links both of which are artifacts of active measurement techniques We evaluate heuristics that improve the accuracy of the inferred Rocketfuel topologies Finally we discuss limitations of active measurements techniques to capture topological properties such as path diversity

International Aerospace Abstracts ,1999

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Table of Contents Pdf Analysis Throughput Experiments Mathematical Computational

1. Understanding the eBook Pdf Analysis Throughput Experiments Mathematical Computational
 - The Rise of Digital Reading Pdf Analysis Throughput Experiments Mathematical Computational
 - Advantages of eBooks Over Traditional Books
2. Identifying Pdf Analysis Throughput Experiments Mathematical Computational
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Pdf Analysis Throughput Experiments Mathematical Computational
 - User-Friendly Interface
4. Exploring eBook Recommendations from Pdf Analysis Throughput Experiments Mathematical Computational
 - Personalized Recommendations
 - Pdf Analysis Throughput Experiments Mathematical Computational User Reviews and Ratings

- Pdf Analysis Throughput Experiments Mathematical Computational and Bestseller Lists
- 5. Accessing Pdf Analysis Throughput Experiments Mathematical Computational Free and Paid eBooks
 - Pdf Analysis Throughput Experiments Mathematical Computational Public Domain eBooks
 - Pdf Analysis Throughput Experiments Mathematical Computational eBook Subscription Services
 - Pdf Analysis Throughput Experiments Mathematical Computational Budget-Friendly Options
- 6. Navigating Pdf Analysis Throughput Experiments Mathematical Computational eBook Formats
 - ePub, PDF, MOBI, and More
 - Pdf Analysis Throughput Experiments Mathematical Computational Compatibility with Devices
 - Pdf Analysis Throughput Experiments Mathematical Computational Enhanced eBook Features
- 7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Pdf Analysis Throughput Experiments Mathematical Computational
 - Highlighting and Note-Taking Pdf Analysis Throughput Experiments Mathematical Computational
 - Interactive Elements Pdf Analysis Throughput Experiments Mathematical Computational
- 8. Staying Engaged with Pdf Analysis Throughput Experiments Mathematical Computational
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Pdf Analysis Throughput Experiments Mathematical Computational
- 9. Balancing eBooks and Physical Books Pdf Analysis Throughput Experiments Mathematical Computational
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Pdf Analysis Throughput Experiments Mathematical Computational
- 10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
- 11. Cultivating a Reading Routine Pdf Analysis Throughput Experiments Mathematical Computational
 - Setting Reading Goals Pdf Analysis Throughput Experiments Mathematical Computational
 - Carving Out Dedicated Reading Time
- 12. Sourcing Reliable Information of Pdf Analysis Throughput Experiments Mathematical Computational
 - Fact-Checking eBook Content of Pdf Analysis Throughput Experiments Mathematical Computational
 - Distinguishing Credible Sources

13. Promoting Lifelong Learning
 - Utilizing eBooks for Skill Development
 - Exploring Educational eBooks
14. Embracing eBook Trends
 - Integration of Multimedia Elements
 - Interactive and Gamified eBooks

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