1. Record Nr. UNISA996466228703316 Computer Aided Systems Theory – EUROCAST 2015 [[electronic **Titolo** resource] ]: 15th International Conference, Las Palmas de Gran Canaria, Spain, February 8-13, 2015, Revised Selected Papers / / edited by Roberto Moreno-Díaz, Franz Pichler, Alexis Quesada-Arencibia Pubbl/distr/stampa Cham:,: Springer International Publishing:,: Imprint: Springer,, 2015 **ISBN** 3-319-27340-X Edizione [1st ed. 2015.] Descrizione fisica 1 online resource (XVIII, 887 p. 351 illus. in color.) Collana Theoretical Computer Science and General Issues, , 2512-2029;; 9520 Disciplina 004 Soggetti Computer simulation Artificial intelligence Medical informatics Image processing—Digital techniques Computer vision Application software Computer-aided engineering Computer Modelling Artificial Intelligence **Health Informatics** Computer Imaging, Vision, Pattern Recognition and Graphics Computer and Information Systems Applications Computer-Aided Engineering (CAD, CAE) and Design Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Bibliographic Level Mode of Issuance: Monograph Note generali Nota di contenuto Intro -- Preface -- Organization -- Contents -- Systems Theory and Applications -- Which State Feedback Control Laws will not Alter the System's Transfer Function? -- Abstract -- 1 Problem Formulation -- 2 Model Matching by State Feedback -- 3 Parameterization of State Feedback Control Laws -- 4 Example -- 5 Conclusions -- References -- A Simple Linearisation of the Self-shrinking Generator -- 1

Introduction -- 2 Fundamentals and Basic Notation -- 2.1 The Self-

shrinking Generator -- 2.2 Cellular Automata -- 3 The Self-shrinking Generator in Terms of Linear CA -- 4 90/150 CA Versus 102/60 CA -5 Application of the CA to the Self-shrinking Generators Cryptanalysis -- 6 Conclusions -- References -- Systems Theory and Model of Diversification in Building of Information Systems -- Abstract -- 1 Introduction -- 2 Current Situation in Building of Information Systems -- 3 Proposed Model in Building of Information Systems -- 4 Conclusion -- Acknowledgments -- References -- Time Sub-Optimal Control of Triple Integrator Applied to Real Three-Tank Hydraulic System -- 1 Introduction -- 2 Problem Statement -- 3 Nonlinear Decomposition -- 4 Time Sub-Optimal Solution -- 5 Application to the Real Three-Tank Hydraulic System -- 5.1 Model of the Hydraulic System -- 5.2 Exact Linearization Method -- 5.3 Control of the Real System -- 6 Conclusions -- References -- Use of the Automatic Identification System in Academic Research -- Abstract -- 1 Introduction -- 2 The AIS Functional Overview -- 3 AIS Research Environments -- 4 MarineTraffic Academic AIS Network -- 5 Some Empirical Applications Related to Las Palmas Port -- 6 Conclusions --References -- Application of Multi-valued Decision Diagrams in Computing the Direct Partial Logic Derivatives -- 1 Introduction -- 2 Background Theory -- 3 Representation of Structure Functions by MDDs.

4 Direct Partial Logic Derivative and MSS Measures -- 5 Experimental Results -- 6 Concluding Remarks -- References -- Identification of First Order Plants by Relay Feedback with Non-symmetrical Oscillations -- 1 Introduction -- 1.1 Method Derivation -- 2 PI1 - Controller -- 3 Real Experiment - Fan RPM -- 3.1 Identification -- 3.2 Control -- 4 Real Experiment - Temperature -- 4.1 Identification -- 4.2 Control --5 Conclusion -- References -- Managing Certificate Revocation in VANETs Using Hash Trees and Query Frequencies -- 1 Introduction --2 Related Work -- 3 Managing Certificate Revocation -- 4 Building the Tree -- 5 Conclusions -- References -- Constrained Pole Assignment Control for a 2nd Order Oscillatory System -- 1 Introduction -- 2 Problem Formulation -- 2.1 Stability and Controllability -- 2.2 Linear Pole Assignment PD Control for Real Poles -- 2.3 Invariant Sets of Linear Control GL -- 2.4 Reference Braking Curves RBCj -- 2.5 Controllers Decreasing the Distance from RBC -- 2.6 Constrained PD Controller for Distance I(x) =y-yb -- 2.7 Constrained PD Controller for Distance Definition 1(x) =-b -- 3 Conclusions -- References --Parallel and Distributed Metaheuristics -- 1 Introduction -- 2 Optimization Dilemmas -- 3 Ultramodern Approaches -- 4 New Attitudes -- 5 Metaheuristics -- 6 Parallel Metaheuristics -- 7 Distributed Metaheuristics -- 8 Conclusions and Comments --References -- Dynamic Similarity and Distance Measures Based on Quantiles -- 1 Introduction to Cluster Analysis -- 2 Dispersion and Multi-splits: Boxplot as a Similarity Measure -- 2.1 Number of Clusters -- 2.2 The Best Splits -- 3 Conclusion and Future Work -- References -- Eulerian Numbers Weigths in Distributed Computing Nets -- 1 Introduction -- 1.1 Convergent-Divergent Layered Nets -- 1.2 Newton-Hermite Filters -- 2 Eulerian Numbers, Eulerian Networks and Eulerian Filters.

3 Higher Order Euler Filters and Hermitian Euler Formulation -- 4
Conclusion -- References -- Autonomous Paracopter Control Design
-- 1 Introduction -- 2 Propeller Pendulum -- 3 Relay System
Identification -- 4 Application to the Propeller Pendulum Control -- 5
Conclusions and Future Work -- References -- A Class of 3-D
Distributed Modular Computing Nets -- 1 Introduction and Objectives
-- 2 From Pascal Pyramids to Pascal Filters and Nets -- 3 Newton and

Newton-Hermite 3-D Filters and Nets -- 4 Conclusion -- References --Standardized Mapping Model for Heritage Preservation and Serendipity in Cloud -- Abstract -- 1 Introduction -- 1.1 Context of Preservation and Serendipity Concepts -- 1.2 Quality Attributes -- 2 Architectural Framework -- 3 Architecture Vision -- 4 Evaluation Methods -- 5 Cost Model for Digital Preservation -- 6 Future Projects -- 7 Conclusion --References -- Structuring the Model of Complex System Using Parallel Computing Techniques -- 1 Introduction -- 2 Complex Systems Properties -- 3 Computational Complexity -- 4 Structuring a Complex Systems Models -- 5 Modeling of Collective Animal Behavior -- 6 Conclusion -- References -- The Evolution of Models: Uncovering the Path of Model Improvement -- Abstract -- 1 Purpose -- 2 A Generic Model of the Modeling Process -- 3 Simulation Results -- 4 Conclusion -- Acknowledgement -- References -- Modelling Biological Systems --Some Remarks on First-Passage Times for Integrated Gauss-Markov Processes -- 1 Introduction -- 2 Main Results -- 2.1 FPT Through One Boundary -- 2.2 FPT in the Two-Boundary Case: First Exit Time from an Interval -- References -- A Sequential Test for Evaluating Air Quality --1 Introduction -- 2 The Proposed Methodology -- 3 The Data -- 4 Results -- 5 Some Concluding Remarks -- References -- Population Models and Enveloping -- 1 Introduction -- 2 Enveloping. 2.1 Linear Fractionals -- 2.2 Enveloping Examples -- 2.3 Enveloping by a Linear Fractional is only Sufficient -- 2.4 Other Enveloping Functions -- 3 Techniques A and B -- 4 General Theorem -- 4.1 Multifunctions -- 4.2 Multidimensional -- 5 Summary Table -- 6 Conclusion --References -- Fractional Growth Process with Two Kinds of Jumps -- 1 Introduction -- 2 Background and Preliminary Results -- 2.1 Fractional Poisson Process -- 2.2 Jump Process with 2 Kinds of Jumps -- 3 Fractional Growth Process -- References -- Towards Stochastic Modeling of Neuronal Interspike Intervals Including a Time-Varying Input Signal -- 1 Introduction -- 2 The Model -- 3 Some Numerical and Simulation Results -- 3.1 An Asymptotic Approximation for gV1(S, t|v0.0) -- 3.2 Some Comparisons -- References -- A Cancer Dynamics Model for an Intermittent Treatment Involving Reduction of Tumor Size and Rise of Growth Rate -- 1 Introduction -- 2 The Model -- 3 Some Remarks -- 4 Numerical Analysis -- References -- On Time Nonhomogeneous Feller-Type Diffusion Process in Neuronal Modeling -- 1 Diffusion Neuronal Models -- 1.1 Feller-Type Process -- 1.2 Ornstein-Uhlenbeck Process -- 2 Some Comparisons -- References -- Intelligent Information Processing -- A Practical Experience on Reusing Problem-Solving Methods for Assessment Tasks -- Abstract -- 1 Introduction --1.1 Problem-Solving Methods -- 2 An Assessment Task for the Selection of Wastewater Treatment Technologies -- 2.1 Identify Key Domain Concepts -- 2.2 Adapt the PSM and Operationalise the Inferences -- 3 Conclusions -- Acknowledgements -- References --Requirements for Long-Term Preservation of Digital Videos and First Experiments with an XMT-Based Approach -- 1 Introduction -- 1.1 Long-Term Preservation -- 1.2 Requirements for the Preservation of Digital Videos -- 1.3 Archiving Infrastructure and Processes. 2 XMT-Based Approach for Archiving Digital Videos -- 2.1 Design and Implementation of a First Prototype -- 2.2 Advantages of the Approach -- 2.3 Challenges Related to the Approach -- 3 Outlook and Conclusions -- References -- Adaptive Flood Forecasting for Small Catchment Areas -- Abstract -- 1 Introduction and Motivation -- 2 Related Research -- 3 Flood Forecasting System for Small Catchment Areas -- 3.1 Continuous Situation Awareness Component -- 3.2 Dynamic Workflow Component -- 4 Results -- 5 Conclusion and Future Work -- Acknowledgments -- References -- A Scalable Monitoring

Solution for Large-Scale Distributed Systems -- 1 Introduction -- 2 Related Work -- 3 System Description -- 4 Ground Model of the Monitoring Framework -- 5 Monitoring Metrics -- 6 Future Refinements of the Model -- 7 Conclusions -- References -- Using Smart Grid Data to Predict Next-Day Energy Consumption and Photovoltaic Production -- 1 Introduction -- 2 Materials and Methods -- 2.1 Predicting Load Profiles -- 2.2 Predicting PV Power Production -- 3 Results -- 4 Discussion -- References -- Sitting Property-Based Testing at the Desktop -- 1 Introduction -- 2 Example of Typical Desktop Ecosystem Inhabitants: Heterogeneous Components of an Alarm Service -- 3 Running QuickCheck-Generated Tests over D-Bus -- 4 Discussion -- 5 Conclusions -- References -- Adaptation Engine for Large-Scale Distributed Systems -- 1 Introduction -- 2 Knowledge Management Using Case-Based Reasoning -- 2.1 Motivation -- 2.2 Case-Based Reasoning -- 3 Adaptation Approach in Terms of Action Management -- 4 Future Development -- 5 Related Work -- 6 Conclusions -- References -- Theory and Applications of Metaheuristic Algorithms -- A Multi-stage Approach Aimed at Optimizing the Transshipment of Containers in a Maritime Container Terminal -- 1 Introduction -- 2 Maritime Container Terminals. 3 Related Works.

## Sommario/riassunto

This volume constitutes the papers presented at the 15th International Conference on Computer Aided Systems Theory, EUROCAST 2015, held in February 2015 in Las Palmas de Gran Canaria, Spain. The total of 107 papers presented were carefully reviewed and selected for inclusion in the book. The contributions are organized in topical sections on Systems Theory and Applications; Modelling Biological Systems; Intelligent Information Processing; Theory and Applications of Metaheuristic Algorithms; Computer Methods, Virtual Reality and Image Processing for Clinical and Academic Medicine; Signals and Systems in Electronics; Model-Based System Design, Verification, and Simulation; Digital Signal Processing Methods and Applications; Modelling and Control of Robots; Mobile Platforms, Autonomous and Computing Traffic Systems; Cloud and Other Computing Systems; and Marine Sensors and Manipulators.