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Nota di contenuto	Systems Theory and Applications -- Transdisciplinary Software Development for Early Crisis Detection -- Uncertainty and Ambiguity: Challenging Layers in Model Construction -- George J. Boole. A Nineteenth Century Man for the Modern Digital Era -- Improvement of Electromagnetic Systems by Werner Von Siemens -- Improvement of Electromagnetic Systems by Werner Von Siemens -- Theory and Applications of Metaheuristic Algorithms -- Multi-criteria Optimization of Workflow-based Assembly Tasks in Manufacturing -- Lightweight Interpolation-Based SurroImproving the Flexibility of Shape-Constrained Symbolic Regression with Extended Constraints -- gate Modelling for MultiObjective Continuous Optimisation -- Analysis and Handling of Dynamic Problem Changes in OpenEnded Optimization -- Dynamic Vehicle Routing with Time-Linkage: From Problem States to Algorithm Performance -- Dynamic Fitness Landscape Analysis -- A Relative Value Function Based Learning Beam Search for Longest Common Subsequence Problem -- Multi-day Container Drayage Problem with Active and Passive Vehicles -- On Discovering Optimal Trade-Offs when Introducing New Routes in Existing Multi-Modal Public Transport Systems -- A Mathematical Model and GRASP for a Tourist Trip Design Problem -- A Large Neighborhood Search for

Battery Swapping Station Location Planning for Electric Scooters -- Shapley Value based Variable Interaction Networks for Data Stream Analysis -- Symbolic Regression with Fast Function Extraction and Nonlinear Least Squares Optimization -- Comparing Shape-Constrained Regression Algorithms for Data Validation -- Shape-constrained Symbolic Regression with NSGA-III -- Using Explainable Artificial Intelligence for Data Based Detection of Complications in Records of Patient Treatments -- Identifying Differential Equations to predict Blood Glucose using Sparse Identification of Nonlinear Systems. -Obtaining Difference Equations for Glucose Prediction by Structured Grammatical Evolution and sparse identification -- Model-Based System Design, Verification and Simulation -- Modeling Approaches for Cyber Attacks on Energy Infrastructure -- Simulation setup for a closed-loop regulation of neuro-muscular blockade -- Textile In The Loop as Automated Verification Tool for Smart Textiles Applications -- Orchestrating Digital Twins for Distributed Manufacturing Execution Systems -- Automata with Bounded Repetition in RE2 -- Integrating OSLC Services into Eclipse -- Developing an Application in the Forest for New Tourism Post COVID-19 -- GPU-Accelerated Synthesis of Probabilistic Programs -- Static Deadlock Detection in Low-Level C Code -- Applications of Signal Processing Technology -- 3D Ultrasound Fingertip Tracking -- An Artificial Skin from Conductive Rubber -- Neural Network Based Single-Carrier Frequency Domain Equalization -- Smooth Step Detection -- Optical Preprocessing and Digital Signal Processing for the Measurement of Strain in Thin Specimen -- Lower Limbs Gesture Recognition Approach to Control a Medical Treatment Bed -- Artificial Intelligence and Data Mining for Intelligent Transportation Systems and Smart Mobility -- JKU-ITS Automobile for Research on Autonomous Vehicles -- Development of a ROS-based Architecture for Intelligent Autonomous on Demand Last Mile Delivery -- Contrastive Learning for Simulation-to-Real Domain Adaptation of LiDAR data -- Deep Learning Data Association Applied to Multi-Object Tracking Systems -- A Methodology to Consider Explicitly Emissions in Dynamic User Equilibrium Assignment -- Sensitivity Analysis for A Cooperative Adaptive Cruise Control Car Following Model: Preliminary Findings -- On Smart Mobility and Data Stream Mining -- Smart Vehicle Inspection -- Computer Vision, Machine Learning for Image Analysis and Applications -- Impact of the Region of Analysis on the Performance of the Automatic Epiretinal Membrane Segmentation in OCT Images -- Performance Analysis of GAN approaches in the Portable Chest X-ray synthetic image generation for COVID-19 screening -- Clinical Decision Support tool for the Identification of Pathological Structures Associated with Age-related Macular Degeneration -- Deep Features-based approaches for Phytoplankton Classification in Microscopy Images -- Robust Deep Learning-based Approach for Retinal layer Segmentation in Optical Coherence Tomography Images -- Impact of increased centerline weight on the Joint segmentation and classification of arteries and veins in color fundus images -- Rating the Severity of Diabetic Retinopathy on a Highly Imbalanced Dataset -- Gait Recognition using 3D View-Transformation Model -- Segmentation and Multi-Facet Classification of Individual Logs in Wooden Piles -- Drone Detection Using Deep Learning: A Benchmark Study -- Computer and Systems Based Methods and Electronic Technologies in Medicine -- Continuous Time Normalized Signal Trains for a Better Classification of Myoelectric Signals -- A Comparison of Covariate Shift Detection Methods on Medical Datasets -- Towards a Method to Provide Tactile Feedback in Minimally Invasive Robotic Surgery -- Reference Datasets for Analysis

of Traditional Japanese and German Martial Arts -- A Novel Approach to Continuous Heart Rhythm Monitoring for Arrhythmia Detection -- Indoor Positioning Framework for Training Rescue Operations Procedures at the Site of a Mass Incident or Disaster -- Designing sightseeing support system in Oku-Nikko using BLE beacon -- Systems in Industrial Robotics, Automation and IoT -- Mixed Reality HMI for Collaborative Robots -- A Digital Twin Demonstrator for Research and Teaching in Universities -- Robot System as a Testbed for AI Optimizations -- An Architecture for Deploying Reinforcement Learning in Industrial Environments -- Ck-continuous Spline Approximation with TensorFlow Gradient Descent Optimizers -- Stepwise Sample Generation -- Optimising Manufacturing Process with Bayesian Learning and Knowledge Graphs -- Representing Technical Standards as Knowledge Graph to Guide the Design of Industrial Systems -- Improvements for mlrose Applied to the Traveling Salesperson Problem -- Survey on Radar Odometry -- Systems Thinking. Relevance for Technology, Science and Management Professionals -- Systems Thinking. Relevance for Technology, Science and Management Professionals -- Crisis Management in a Federation – Cybernetic Lessons from a Pandemic -- Using Archetypes to Teach Systems Thinking in an Engineering Master’s Course -- Collecting vs Sharing of Personal Data: Examining the Implications to the Society.

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Sommario/riassunto

This book constitutes the refereed proceedings of the 18th International Conference on Computer-Aided Systems Theory, EUROCAST 2022, held in Las Palmas de Gran Canaria, Spain, during February 20–25, 2022. The 77 full papers included in this book were carefully reviewed and selected from 110 submissions. They were organized in topical sections as follows: Systems Theory and Applications, Theory and Applications of Metaheuristic Algorithms, Model-Based System Design, Verification and Simulation, Applications of Signal Processing Technology, Artificial Intelligence and Data Mining for Intelligent Transportation Systems and Smart Mobility, Computer Vision, Machine Learning for Image Analysis and Applications, Computer and Systems Based Methods and Electronic Technologies in Medicine, Systems in Industrial Robotics, Automation and IoT, Systems Thinking. Relevance for Technology, Science and Management Professionals.

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