

1. Record Nr.	UNINA9910629286603321
Titolo	Advances and New Trends in Environmental Informatics : Environmental Informatics and the UN Sustainable Development Goals / / edited by Volker Wohlgemuth, Stefan Naumann, Grit Behrens, Hans-Knud Arndt, Maximilian Höb
Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
ISBN	3-031-18311-8
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (231 pages)
Collana	Progress in IS, , 2196-8713
Disciplina	333.714 363.700285
Soggetti	Business information services Environmental management Geotechnical engineering Energy policy Artificial intelligence IT in Business Environmental Management Geotechnical Engineering and Applied Earth Sciences Energy Policy, Economics and Management Artificial Intelligence
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Intro -- Preface -- Contents -- About the Editors -- Circular Economy an Industrial Symbiosis -- Cradle-to-Gate Life Cycle Assessment of Bottle-to-Bottle Recycling Plant: Case Study -- 1 Introduction -- 2 Methodology -- 2.1 Goal -- 2.2 Scope -- 2.3 Limitation -- 3 Recycling PET Bottles into Pellets -- 3.1 Collection of Post-consumer Bottles -- 3.2 Production of Recycled PET Pellets -- 4 Life-Cycle Impact Assessment (LCIA) Results and Discussion -- 5 Conclusion -- References -- Property Rights in Servitisation: A Practical Assessment with Reused Computers -- 1 Introduction -- 2 The Circular Economy of Computers -- 2.1 Business and Individual Ownership Models -- 3

Electronics Reuse: eReuse -- 4 Collective Ownership Model and the Bundle of Rights -- 5 Results -- 5.1 Business Model, Roles and Rights -- 5.2 Economic Impact -- 5.3 Environmental Impact -- 5.4 Social Impact -- 6 Discussion -- 6.1 Alienation and Exclusion Rights -- 6.2 Management Rights -- 6.3 Product Upgrading and Decision Replacement -- 6.4 Ecosystems -- 6.5 Limitations -- 6.6 Future Work -- 7 Conclusion -- References -- Sustainable Mobility and Sustainable Communities -- Carbon Travel Budgets (CTB): An Alternative Approach to Reduce Corporate Travel Emissions -- 1 Business Travel in Transition -- 2 Related Work -- 3 Categorization of Corporate Travel -- 4 Results -- 4.1 Talking Dimension -- 4.2 The Budgeting Approach -- 4.3 Limitations of the Budgeting Approach -- 5 Proof of Concept -- 6 Discussion and Future Work -- References -- Commuters' Expected Utility Obtained in Decision Making on Residential Location Selection -- 1 Introduction -- 1.1 Background and Objectives of Research -- 1.2 Relevant Previous Research and New Topics in This Study -- 1.3 Study Overview -- 2 Method for Stable Estimates of Residential Location Selection Utility (RLSU) for Commuters.

2.1 Method of Estimating Residential Location Selection Utility (RLSU) -- 2.2 Data Used in Analysis -- 2.3 Results of Residential Location Selection Utility Estimate -- 3 Modeling of Residential Location Selection Utility (RLSU) Using Land Price Data and Land Use Data -- 3.1 Model Estimates and Their Basic Characteristics -- 3.2 Characteristics of Residential Location Selection Utility with Regard to Household Classification -- 4 Modeling of Residential Location Selection Utility Based on Proximity Indicators and Land Use -- 4.1 Results of Estimates by Model and Fundamental Trends in Results -- 4.2 Comparative Analysis Between Estimates of Residential Location Selection Utility and Land Use -- 5 Summary and Conclusions -- References -- Analysis and Improvement of Two Low-Cost Air Quality Sensor Measurements' Uncertainty -- 1 Introduction -- 2 Materials and Methods -- 2.1 Study Area and Experimental Setup -- 2.2 Data Pre-processing -- 2.3 Intercomparison of Measurements -- 2.4 Data-Driven Modelling -- 3 Results and Discussion -- 3.1 Data Pre-processing -- 3.2 Intercomparison of Devices -- 3.3 Uncertainty of PM10 Measurements -- 4 Conclusions -- Appendix A -- References -- Usage of Country Evaluations for Sustainable Supplier Selection -- 1 Introduction -- 2 Identification and Interpretation of Relevant Indicators -- 2.1 Evaluation of a Country's Risk -- 3 Consideration of Existing Systems and Legal Bases -- 3.1 Readiness-Checks to Simplify Company Processes -- 3.2 Importance of Supply Chain Laws -- 4 Combination and Operationalization of the Approaches -- 5 Discussion and Future Work -- References -- Artificial Intelligence Applications -- Spatiotemporal Prediction of Nitrogen Dioxide Based on Graph Neural Networks -- 1 Introduction -- 2 Related Work -- 3 Data -- 4 Methodology -- 4.1 Graph Neural Network.

4.2 Attention Temporal Graph Convolutional Network -- 4.3 Evaluation Metrics -- 4.4 Graph Construction -- 5 Experimental Analysis and Results -- 5.1 Results -- 6 Conclusions and Future Work -- References -- Neural Networks for Energy Optimization of Production Processes in Small and Medium Sized Enterprises -- 1 Introduction -- 2 Materials and Methods -- 2.1 Data Preparation -- 2.2 Design of the Neural Network -- 2.3 Training of the Neural Network -- 2.4 Parameter Configuration Optimization -- 3 Results -- 4 Discussion -- References -- Disaster Risk Reduction -- Comprehensive Drone System for Deployment in Disaster Scenarios with Focus on Forest Fire Fighting -- 1 Introduction -- 1.1 Motivation -- 1.2 Requirements -- 1.3 System Overview -- 2 Related Work -- 3 System Design -- 3.1 Drone -- 3.2

Ground Station -- 3.3 Flight Control -- 3.4 Mission Control -- 3.5
Collision Avoidance -- 3.6 User Interface -- 3.7 Radio Communication
-- 4 Outlook -- References -- A Whole-of-Government Approach to
Climate change and the Process of Making Cities Resilient:
Constructing a Digital Twin Network for Urban Adaptation -- 1
Introduction -- 2 The Context of a Tool for Resilient Cities -- 2.1
Product Vision -- 2.2 Comparing Indicator Sets -- 2.3 From Hazard
Maps Towards a Co-creatively Workable Digital Twin -- 2.4
Establishing New Networks to Stack the Systems of Systems -- 2.5
Resilience-Platform: Providing Access to Knowledge -- 3 Conclusion
and Outlook -- References -- Green Coding and Green IT -- Measuring
and Assessing the Resource and Energy Efficiency of Artificial
Intelligence of Things Devices and Algorithms -- 1 Introduction -- 2
Related Work -- 3 Experiment Setup and Assessment Method -- 3.1
Operating System Scenario -- 3.2 AI-Algorithm Scenarios -- 3.3 Use-
Case Scenario "Artificial Nose" -- 4 Exemplary Measurement Results.
4.1 Operating System Scenario -- 4.2 AI-Algorithm Scenarios -- 4.3
Use-Case Scenario "Artificial Nose" -- 5 Discussion and Outlook --
References -- Energy Efficiency in Web Development: Investigation
of the Power Consumption of a Web Application with Different Load
Distribution -- 1 Introduction -- 2 State of the Art -- 2.1 Power
Consumption of a Web Application -- 2.2 Measurement
of Consumption -- 3 Related Work -- 4 Details of the Experimental
Setup -- 4.1 Workload -- 4.2 Specifications -- 4.3 Setup
of the Experiment -- 4.4 Experimental Procedure -- 5 Results
and Discussion -- 6 Summary and Outlook -- References --
Opportunities of 5G Mobile Technology for Climate Protection
in Switzerland -- 1 Introduction -- 2 Materials and Methods -- 2.1
Assessment of Direct Effects -- 2.2 Assessment of Indirect Effects -- 3
Results -- 3.1 Direct Effects -- 3.2 Indirect Effects -- 4 Discussion --
4.1 Direct Effects -- 4.2 Indirect Effects -- 4.3 Comparison of Direct
and Indirect Effects -- 4.4 Limitations -- 5 Conclusions -- References.

Sommario/riassunto

This book is an outcome of the 36th International Conference EnvirolInfo 2022, held at the University of Hamburg, Germany, organized by the technical committee for Environmental Informatics of the German Informatics Society. It presents a selection of papers that describe innovative scientific approaches and ongoing research in environmental informatics and the emerging field of environmental sustainability, promoted and facilitated by the use of information and communication technologies (ICT). The respective articles cover a broad range of scientific aspects including advancements in core environmental informatics-related technologies such as earth observation, environmental modelling, geographical information systems, sustainable transportation, risk modelling and assessment, artificial intelligence applications, renewable energy-based solutions, optimization of infrastructures, sustainable industrial processes, citizen science, as well as applications of ICT solutions that are aiming at supporting societal transformation processes towards more sustainable management of resource use and energy supply. A special focus is on how environmental informatics research covers the societal challenges of digitalization and sustainability, green in IT, green by IT and their relationships, green data centres, green software engineering, green coding and green environmental management information systems. The book is essential reading for scientists, experts and students in these fields of research.
