1. Record Nr. UNINA9910765487303321

Autore	Dovgyi Stanislav
Titolo	Information and Communication Technologies and Sustainable Development : Advanced Approaches and Innovations in up-To-Date Networks and Systems
Pubbl/distr/stampa	Cham : , : Springer, , 2023 ©2023
ISBN	9783031468803 3031468805
Edizione	[1st ed.]
Descrizione fisica	1 online resource (481 pages)
Collana	Lecture Notes in Networks and Systems Series ; ; v.809
Altri autori (Persone)	TrofymchukOleksandr UstimenkoVasyl GlobaLarysa
Disciplina	338.9270285
Soggetti	Sustainable development Information technology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Acknowledgments -- XXI International Scientific and Practical Conference Information and Communication Technologies and Sustainable Development (22 ICPC ICTSD) -- About This Book -- Contents -- About the Editors -- Sustainable Development (Analysis of Problems and Technological Factors) -- Sustainable Development in the Global Information Space -- 1 Introduction -- 2 Activities of Society for Achieving Sustainable Development -- 3 Activities of International Organizations on Environmental Protection and Sustainable Development -- 4 Gaps in Approaches to Counteracting Threats to Sustainable Development -- 4.1 Why is There No Radical Change? -- 4.2 Why is There No Confidence in the SDG Achieved? -- 5 The Root Causes of Threats to the Existence of Earthly Civilization -- 6 Basic Principles of Sustainable Development Concept -- 7 Mechanisms for Achieving SDGs -- 7.1 General Mechanisms -- 7.2 Some Specific Mechanisms -- 8 Conclusions -- References -- Enhancing Resource Availability: Indicators and Strategies for Optimizing the Kubernetes Network -- 1

Introduction -- 2 Principle of Pod Construction -- 3 Estimate Availability in Kubernetes -- 3.1 Typical Network -- 3.2 Task Definition -- 3.3 Task Calculation: Pod Availability -- 3.4 Task Calculation: Network Transformation -- 3.5 Task Calculation: Net Graph -- 4 Pod Interaction Scenarios and Their Impact on Service Availability -- 4.1 Pod Interaction Scenario on the Same Node -- 4.2 Scenario of Interaction Between Pods on Different Nodes -- 5 Conclusions -- 6 Future Work -- References -- Enhancing Application Layer Multicast Using Multi-objective Optimization Techniques -- 1 Introduction -- 2 Related Work -- 2.1 Application Layer Multicast -- 2.2 Existing Approaches to Optimize ALM -- 2.3 Multi-objective Optimization Techniques.
2.4 Reliable Multi-Destination Transport (RMDT) Protocol -- 3 Proposed Method -- 4 Implementation Details -- 4.1 AWS Infrastructure -- 4.2 Network Configuration -- 5 Implementation Details -- 5.1 Network Configuration -- 5.2 Network Conditions -- 5.3 Experimental Scenarios -- 6 Results -- 7 Conclusion and Future Work -- References -- Possible Ways of Determining the Characteristics of Network Traffic for Identification of Required External Connection Line Rate for a Specific Object -- 1 Introduction -- 2 General Principles of Traffic Transmission in Packet Networks -- 3 Connectivity Traffic Profiles -- 4 The Method of Estimation of Required Bandwidth for a Specific Object -- 5 Conclusions -- References -- A Research Method of Software-Defined Networks Asymptotic Properties with Markov Intrusion of Randomness -- 1 Introduction -- 2 Network Services Platform -- 3 A Research Method of Software-Defined Networks -- 4 Main Results -- 5 Conclusions -- References -- Mathematical Model for Evaluation of Interference Dispersion for 5G Mobile Communication Systems -- 1 Introduction -- 2 Setting Objectives -- 3 Main Material -- 4 Conclusions -- References -- Method Radio Resource Allocation in Cognitive Radio Network -- 1 Introduction -- 2 Electromagnetic Compatibility of Radio-Electronic Means in Mobile and Cognitive Networks -- 3 Methods of Ensuring Electromagnetic Compatibility During the Cognitive Distribution of Mobile Network Resources -- 4 Game-Theoretic Model for Assessing the Electromagnetic Compatibility of Radio-Electronic Means of Cognitive Radio Networks -- 5 A Method for Distributing a Frequency Resource in a Cognitive Radio Network based on the Maximin Algorithm -- 6 Analysis of the Effectiveness of the Method of Optimal Distribution of the Frequency Resource for the Cognitive Radio Network -- 7 Conclusions -- References. Trends in the Development of Information and Communication Technologies and Systems -- Features of Message Transport Service in Automated Special-Purpose Systems -- 1 Introduction -- 2 Article Purpose -- 3 Statement of Basic Material -- 3.1 Structural Diagram of Messaging in the Context of One Workstation -- 3.2 Structural Diagrams of Messaging in the Context of One Domain -- 3.3 Structural Diagram of Messaging in the Context of the Interconnect Between Domains -- 4 Algorithm for the Optimal Message Transmission Route -- 5 An Example of TN Optimal Route Choosing -- 6 Conclusions -- References -- QoS-Aware Adaptation Traffic Engineering Solution for Multipath Routing in Communication Network -- 1 Introduction -- 2 Literature Review -- 3 Traffic Engineering QoS-Aware Multipath Disjoint Routing Model -- 4 Research on the Proposed QoS-Aware Adaptation Traffic Engineering Solution under Disjoint Paths in Communication Networks -- 5 Conclusions -- References -- Impact of LoRaWAN Operational Parameters on Energy Efficiency and Ways to Improve It -- 1 Introduction -- 2 State of the Art -- 3 Laboratory

Measurements -- 3.1 Experimental Setup -- 3.2 Measurements of the RSSI, Uplink, Delay, Downlink, Sleep and RTT -- 3.3 Measurements of the Transmission Power -- 3.4 Measurements of the Processing, Total Power and the Battery Life of an End Device -- 4 Measurements of the Range -- 4.1 Static Measurements of the Range -- 4.2 Dynamic Measurements of the Range -- 5 Conclusions -- References -- Notation System for Comparing and Synthesis of Intelligent Key Phrase Extraction Methods for Ontological Models in Information Systems -- 1 Introduction -- 2 Methods and Materials -- 3 Results -- 3.1 Famous Methods -- 3.2 Realization -- 4 Discussion -- 5 Conclusions -- References -- IT Platform for the Formation of Digital Duplicates for Museum Exhibits -- 1 Introduction.
2 Means and Approaches to Virtualization of Real World Objects -- 2.1 Virtual Museums and Digital Duplicates of Objects in Museum Exhibits -- 2.2 Technology for Creating Digital Duplicates of Objects in Museum Exhibits -- 2.3 Standardization of Network Interaction with Information Resources of Meaningful Display of Historical and Cultural Heritage -- 3 Transdisciplinary Principles of Consolidation -- 3.1 Standardization of Network Interaction with Information Resources of Meaningful Display of Historical and Cultural Heritage -- 3.2 Taxonomy as a Semantic Platform of Consolidation -- 4 Consolidated Network Information Resources for Meaningful Display of Historical and Cultural Heritage -- 4.1 The Object of Heritage Preservation as an Environment for the Implementation of a Cognitive-Communicative Scenario of Interaction with Consolidated Network Information Resources -- 4.2 User Interaction of 3D Panoramas with Network Information Resources -- 4.3 Formation of a Cognitive-Communicative Scenario in the Form of an Ontological Excursion Route -- 4.4 Transdisciplinary Consolidation of 3D Panoramas with Network Information Resources of a Meaningful Display of Historical and Cultural Heritage on the Example of the Ontological IT Platform "Museum Portal" -- 5 Conclusions -- References -- The Modified Approach to Internet of Things Data Transmission Based on a Combined Neural Network Autoencoder -- 1 Introduction -- 2 Current State of Data Compression in IoT Networks -- 2.1 Analysis of Data Compression in the IoT Network -- 2.2 Analysis of Data Compression Requirements in IoT Networks -- 3 Using Neural Networks for Data Compression -- 4 Modification of the Data Compression Method for Optimizing the Reduction of Data Volumes in the Internet of Things Network -- 5 Implementation and Analysis of Results -- 5.1 Description of Implementation.
5.2 Analysis of Results -- 6 Conclusions -- References -- Study of Energy Efficient Technologies for Workload Processing in Data Centers -- 1 Introduction -- 2 State of the Art and Background -- 3 Load Processing in Distributed Data Center Nodes -- 3.1 Mathematical Model of the Problem -- 3.2 Algorithm for Implementation of the Approach -- 3.3 Description of the Software -- 3.4 Developed Software as a Part of the ICN Platform -- 4 Experimental Research -- 4.1 Conducting the Experiment -- 4.2 The Results of the Experiment -- 5 Conclusions -- References -- Comparison of Methods for Determining User Coordinates in a Wi-Fi/Indoor Network -- 1 Introduction -- 2 The Fingerprinting Method in Location Problems -- 3 Overview of Algorithms for Determining User Location Coordinates in the Fingerprinting Method -- 4 Experiment -- 5 Determination of Positioning Error in Wi-Fi/Indoor Network Based on Fingerprinting Method -- 6 Conclusions -- References -- Transdisciplinary Principles of Consolidation -- 1 Introduction -- 2 Ontological Aspects of Consolidation -- 3 Foundations -- 4 Narrative Discourse as a Format

of Active Representation of Consolidated Information -- 5 Conclusions -- References -- Network Monitoring Index in the Information Security Management System of Critical Information Infrastructure Objects -- 1 Introduction -- 2 Analysis of Existing Global Cybersecurity Network Indexes -- 3 A Model Set of Network Monitoring Index Indicators -- 3.1 General Remarks -- 3.2 General Network Monitoring Indicators -- 3.3 Network Monitoring Indicators for Web Resources -- 3.4 Main Network Monitoring Indicators for Personnel -- 4 A Model for Assessing and Indexing the State of Cybersecurity in Critical Infrastructure -- 5 Network Activity Index in Critical Infrastructure -- 5.1 Basic Information -- 5.2 Objects of Indexing (Rating) -- 5.3 LCSI Formation Methodology.
5.4 Requirements for the Indexing Object.

Sommario/riassunto

This volume is a comprehensive collection of research focused on information and communication technologies and their role in sustainable development. Edited by Stanislav Dovgyi and Oleksandr Globa, the book is part of the 'Lecture Notes in Networks and Systems' series, highlighting advanced approaches and innovations in up-to-date networks and systems. The work is divided into four parts: sustainable development challenges and technological factors, trends in information and communication technologies, systems and remote sensing of the Earth, and mathematical modeling in applied problems. It covers topics such as Kubernetes network optimization, application layer multicast optimization, and broadband Internet access requirements. The intended audience includes researchers, engineers, and professionals in computer science, engineering, and applied sciences.