

1. Record Nr.	UNINA9910502640203321
Autore	Tiwari Rajeev
Titolo	Energy Conservation Solutions for Fog-Edge Computing Paradigms
Pubbl/distr/stampa	Singapore : , : Springer Singapore Pte. Limited, , 2021 ©2022
ISBN	981-16-3448-3
Descrizione fisica	1 online resource (314 pages)
Collana	Lecture Notes on Data Engineering and Communications Technologies Ser. ; ; v.74
Altri autori (Persone)	MittalMamta GoyalLalit Mohan
Soggetti	Electronic books.
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	<p>Intro -- Preface -- Contents -- Editors and Contributors -- Energy-Aware Resource Scheduling in FoG Environment for IoT-Based Applications -- 1 Introduction -- 1.1 Why FoG Computing? -- 1.2 FoG Application Areas in Smart City -- 1.3 Motivation -- 1.4 Contributions -- 1.5 Organization of Work -- 2 Need of FoG Computing -- 2.1 QoS Parameters -- 3 Energy-Aware Survey in Green-IoT -- 4 Related Work -- 4.1 Resource Allocation and Provisioning in Cloud Computing -- 4.2 Resource Allocation and Provisioning in Fog Computing -- 5 Energy Resource Scheduling Algorithms and Intersection of Parameters in Smart City (Smart Homes) -- 6 Future Scope -- References -- DoSP: A Deadline-Aware Dynamic Service Placement Algorithm for Workflow-Oriented IoT Applications in Fog-Cloud Computing Environments -- 1 Introduction -- 2 Motivation Scenario -- 2.1 Sensing Module -- 2.2 Data Aggregation Module -- 2.3 Data Analysis Module -- 2.4 Decision Making -- 2.5 Actuation Module -- 3 Related Work -- 3.1 Building and Deployed Fog-Based IoT Applications -- 3.2 Resource Allocation for IoT Applications in Fog Environment -- 3.3 Service Placement in Fog Environment -- 3.4 A Qualitative Comparison -- 4 System Model -- 4.1 Application Prioritizing Phase -- 4.2 Node Selection Phase -- 4.3 IoT Application Placement Flow in Fog Environment -- 5 Proposed Methodology -- 5.1 Overview of the Proposed Work -- 5.2 Functional Details of the Proposed Work -- 5.3 Deadline-oriented Service</p>

Placement Algorithm (DoSP) -- 6 Performance Evaluation -- 6.1 System Setup and Parameters -- 6.2 Experimental Results -- 7 Conclusion and Future Work -- References -- Improvement of Task Offloading for Latency Sensitive Tasks in Fog Environment -- 1 Introduction -- 2 Cloud, Edge and Fog Computing -- 3 Literature Review -- 4 Smart Flower Optimization Algorithm -- 5 Application of SFOA to Task Offloading Problem.

6 Simulations and Results -- 7 Conclusion -- References --

A Sustainable Energy Efficient IoT-Based Solution for Real-Time Traffic Assistance Using Fog Computing -- 1 Introduction -- 1.1 Vehicle Tracking System -- 1.2 Need of Vehicle Tracking -- 1.3 Problem Statement -- 2 Related Work -- 3 Background -- 3.1 IoT -- 3.2 Cloud Computing -- 3.3 Fog Computing -- 3.4 Cloud, Fog, and IoT -- 4 Proposed Architecture -- 4.1 Problem Formulation and Solution -- 5 Simulation and Results -- 6 Conclusion -- References -- Analysis on Application of Fog Computing in Industry 4.0 and Smart Cities -- 1 Introduction -- 2 Overview of Fog Computing -- 3 Overview of Industry 4.0 and Smart Cities -- 4 Related Studies -- 5 A Fog Computing Enabled Smart City -- 6 Facilitating Industry 4.0 Using Fog Computing Architecture -- 7 Three-Layered Fog-Based IoT Architecture for Industry 4.0 -- 8 Advantages of Using Fog Computing for Industry 4.0 and Smart Cities -- 9 Conclusion -- References -- Fog-Computing: A Novel Approach for Cloud-Based Devices Using Perceptual Cloning Manifestation-PerColNif Taxonomy by Energy Optimization -- 1 Introduction -- 1.1 Fog as Eminent Computing Paradigm -- 2 Related Works -- 2.1 Cloud Computing Era in Health Care Services -- 2.2 Cloud Computing for Vehicle Tracking-Accident Detection Systems -- 2.3 Fog Computing Versus Cloud Computing for Time-Sensitive Applications -- 2.4 Virtual Clusters-Fog Bridging Cloud with Edge Devices -- 3 Tri-Layered Proposed Architecture -- 4 Proposed Taxonomy-Fog-Computing-PerColNif-Taxonomy -- 4.1 Perceptual Cloudlet Cloning Manifestation Process [PerColNif] -- 4.2 PerColNif-Algorithm Implementation -- 4.3 Replacement Services-Node-Node Communication -- 5 Fog-Computing Implementation -- 5.1 Algorithm: ADT-Relax Mode-Quick Mode Sensor Node-Accident Detection Unit -- 5.2 Algorithm-Fog Node Execution.

6 Advantages of PerColNif Using Fog-Computation -- 7 Energy Efficiency Performance Analysis -- 8 Open Challenges on Future Fog-Era -- 9 Conclusion -- References -- Performance Evaluation and Energy Efficient VM Placement for Fog-Assisted IoT Environment -- 1 Introduction -- 1.1 Motivation -- 2 Related Work -- 3 System Model -- 4 Performance Measures -- 5 Profit and Revenue Analysis of the System -- 6 The Energy Model of the Fog System -- 6.1 VM Placement Problem Formulation -- 6.2 Greedy Heuristic Algorithm for Energy Saving -- 6.3 An Illustration -- 6.4 Simulation Results -- 7 Conclusion -- References -- Load Balancing in Fog Computing Using QoS -- 1 Introduction -- 1.1 Fog Computing Architecture Layers -- 1.2 Fog Computing Elementary Layers -- 1.3 Communication Workflow in Fog Environment -- 2 Related Work -- 2.1 Cyber Foraging -- 2.2 Cloudlet -- 3 Proposed Framework -- 3.1 Optimized Load Balancing Algorithm (OLBA) -- 3.2 Environmental Setup -- 4 Results and Discussions -- 4.1 Turn Around Time Performance Test -- 4.2 Fog Resources Resource Utilization -- 4.3 Average Response Time -- 4.4 Processing Delay -- 5 Conclusion and Future Scope -- References -- Fog Computing in Industry 4.0: Applications and Challenges-A Research Roadmap -- 1 Introduction -- 1.1 Fog Computing -- 1.2 Industry 4.0 -- 2 Fog Architecture for Industrial Processes -- 3 Fog Equipped Industrial IoT -- 3.1 Transportation -- 3.2 Smart Grids -- 3.3

Mining -- 3.4 Agriculture -- 3.5 Food Industry -- 3.6 Waste Management -- 3.7 Parking -- 4 Fog Computing in Industry 4.0 -- 4.1 Industrial Internet of Things -- 4.2 Big Data -- 4.3 Cloud Computing -- 4.4 Advancement in Robotics -- 4.5 Smart Manufacturing -- 4.6 Flexibility in Machines -- 4.7 Smart City Applications -- 4.8 Smart Factory Applications -- 4.9 Predictable Maintenance -- 4.10 Augmentative Reality -- 5 Research Challenges.

5.1 Heterogeneity -- 5.2 Security -- 5.3 Programmability -- 5.4 Interoperability -- 5.5 Energy Consumption -- 5.6 Quality of Service (QoS) -- 5.7 Cost -- 6 Conclusions -- References -- Fog Computing Based Architecture for Smart City Projects and Applications -- 1 Introduction -- 1.1 Fog Computing and IoT -- 1.2 Fog Computing Versus Cloud Computing -- 1.3 Contribution -- 2 Related Work -- 3 Smart City Projects in India -- 3.1 Industry 4.0 and Smart City Projects -- 4 Role of Fog Computing in Industry 4.0 for Smart City Projects -- 5 Fog Computing Use Cases for Smart City Projects -- 5.1 Smart Waste Management -- 5.2 IoT-Based Smart Waste Management Systems -- 5.3 Proposed Fog Computing Based Smart Waste Management Architecture -- 5.4 Execution Flow of Proposed Smart Waste Management Architecture -- 5.5 Smart Parking -- 5.6 IoT Based Smart Parking Architectures -- 5.7 Proposed Fog Computing Based Smart Parking Architecture -- 5.8 Execution Flow of Proposed Architecture -- 6 Conclusion -- 7 Future Work -- References -- Integration of Fog Computing and IoT-Based Energy Harvesting (EHIoT) Model for Wireless Sensor Network -- 1 Introduction -- 2 Background -- 2.1 Medical Sensors -- 2.2 IoT and Fog Computing in Smart Healthcare -- 2.3 Energy Consumption Models -- 3 Related Works -- 4 Proposed Design -- 4.1 Design of an IoT/Fog-Based WSN Model for Hospital Environment -- 4.2 Design of the Energy Consumption Model -- 4.3 Design of IoT-Based Energy Harvesting Model (EHIoT) -- 5 Conclusion -- References -- Design and Development of Efficient Secure Routing Mechanism for Wireless Sensor Network -- 1 Background -- 2 High-Level Techniques (HIT) -- 3 Problem Description -- 4 Study Objectives -- 5 Literature Review -- 5.1 Literature Survey Based on Hierarchical Routing Protocols -- 5.2 Existing Research Work on Delay Concept in Routing for WSN.

6 Energy-Efficient and Security-Aware Routing Protocols -- 6.1 FEESR Design Methodology -- 6.2 FEESR Algorithm Design and Implementation -- 6.3 Feesr Numerical Analysis and Outcome Comparison -- 6.4 Result Analysis -- 7 Conclusion -- 7.1 Scope and Limitations of the Study -- 7.2 Future Scope of Applicability -- References -- Futuristic Communication Systems Using Mobile Edge Computing -- 1 Introduction -- 2 Outline of MEC and 5G -- 2.1 Fundamentals of MEC -- 2.2 Integration of MEC with 5G Systems -- 3 Overview of MEC/5G Researches -- 3.1 Internet of Things (IoT) Leveraging MEC -- 3.2 MEC with NOMA -- 3.3 MEC with Heterogeneous CRAN -- 3.4 MEC with UAV Communications -- 3.5 MEC with WPT and EH -- 4 Conclusions -- References -- Methodology to Ensure the Continuity of the Information Systems Service, Based on the Monitoring of Electrical Energy, Using IoT Technology -- 1 Introduction -- 2 Materials and Methods -- 2.1 Literature Review -- 2.2 Analysis of IoT Devices -- 2.3 Choice of Devices to Implement the Methodology -- 2.4 Device Configuration -- 2.5 Performance Analysis -- 2.6 Interpretation of Results -- 3 Results -- 3.1 Server Unit -- 3.2 Power and Control Units -- 3.3 Monitoring Units -- 3.4 Communication Units -- 3.5 Cooling Unit -- 3.6 Acquisition Units -- 3.7 IoT Units -- 3.8 Display Unit -- 4 Conclusions -- References.

