2022 IEEE Nigeria 4th International Conference on Disruptive Technologies for Sustainable Development (NIGERCON 2022)

Abuja, Nigeria
15-17 May 2022

IEEE Catalog Number: CFP22NIG-POD
ISBN: 978-1-6654-7979-0

Copyright © 2022 by the Institute of Electrical and Electronics Engineers, Inc.
All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

****** This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

IEEE Catalog Number: CFP22NIG-POD
ISBN (Print-On-Demand): 978-1-6654-7979-0
ISBN (Online): 978-1-6654-7978-3

Additional Copies of This Publication Are Available From:

Curran Associates, Inc
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: (845) 758-0400
Fax: (845) 758-2633
E-mail: curran@proceedings.com
Web: www.proceedings.com

Table of Contents

High Impedance Fault Modelling and Simulation of 33kV/11kV Distribution Network Using MATLAB 1
Iniobong Abasi-Obot, Gaddafi Shehu, Abdullahi Kunya and Yusuf Jibril

QoS-Aware Earliest Due Date First Scheduling Algorithm for LTE Networks 5
Abdulhakeem Abdulazeez, Ahmad Saifullahi Tijjani and Aminu Mohammed

Prioritized Quality of Service-Aware Downlink Scheduling Algorithm For LTE Network ... 10
Abdulhakeem Abdulazeez, Mahmud Muhammad Yahaya, Isah Bala Yabo, Abdulkarim Bello, Maniru Malami Umar and Aminu Mohammed

The Study of Efficacy of Gaussian Mixture Model In Image Tracking System Using the Canny Optical Flow Technique 15
Zinat Alabi Abdulkadir, Oluwole Abiodun Adegbola, Peter Olalekan Idowu and David Olugbenga Aborisade

A Spatio-Temporal Non-Concurrent Data Gathering and Energy Replenishment in Wireless Rechargeable Sensor Networks (ST-NCDR) 21
Shamsuddeen Abdullahi Mikail, Usman Aliyu Danjuma, Abdoulie Momodou Sunkary Tekanyi, Kabir Abubilal Ahmad and Aminu Muhammad Abba

Quantity vs. Quality of Monolingual Source Data in Automatic Text Translation: Can It Be Too Little If It Is Too Good? 26
Idris Abdulmumin, Bashir Shehu Galadanci, Shamsuddeen Hassan Muhammad and Garba Aliyu

Control of Dual Stator Induction Generator Based Wind Energy Conversion System 31
Ibrahim Abdulwahab, Adamu Saidu Abubakar, Abdulrahman Olaniyan, Bashir Sadiq and Shehu Faskari

A Three-Step One-Time Password, Textual and Recall-Based Graphical Password for an Online Authentication 36
Haruna Adamu, Abdulmalik Danlami Mohammed, Solomon Adelowo Adepoju and Abisoye Opeyemi Aderiike

Effect of Training Algorithms and Network Architecture on the Performance of Multi-Band ANN-Based Path Loss Prediction Model 41
Quadri Ramon Adebowale, Nasir Faruk, Kayode S. Adewole, Abubakar Abdulkarim, Abdulkarim A. Oloyede, Haruna Chiroma, Olugbenga. A. Sowande, Aliyu D. Usman, Yusuf Olayinka Imam-Fulani, Abduljalal Yusha'U Kassim and Lawan S. Taura

A Model for Network Virtualization with Open Flow Protocol in Software Define Networks ..... N/A
Oluwashola David Adeniji, Abiodun Adedayo and Sunday A. Ajagbe

Development of an IoT Based Data Acquisition and Automatic Irrigation System for Precision Agriculture 51
Emmanuel Adetiba, Ayodele Ifijeh, Victoria Oguntosin, Toluwani Odunuga, David Iweala, Ayoola Akindele, Abdultaofeek Abayomi, Obiseye Obiyemi and Surrendra Nigeria Thakur

Multi-class classification and modeling of the hospitalization status of COVID-19 patients 56
Taiwo Adetiloye, Emmanuel Dansu and Akinkunle Akinola

Techno-economic Analysis of Hybrid Energy System Connected to an Unreliable Grid: A Case Study of a Rural Community in Nigeria 61
Saheed Adetoro, Mark Nwohu and Lanre Olatomiwa

An Overview of Configurations and Dispatch Strategies in Hybrid Energy Systems 66
Saheed Adetoro, Lanre Olatomiwa, Jacob Tsado and Solomon Dauda

Development A Web-Based System for Real Time Prediction of Drought In Northern Nigeria Using Markov Chain Technique 71
James Agajo, Thomas Sadiq and Gafai Najashi

Modeling and Dynamic Analysis of hybrid synchronous machine 76
Eugene Agbachi, Linus Uchechukwu Anih and Simon Emeka Obe

Cultural BAT Optimization Algorithm: An Improved Variant of BAT Algorithm 81
Kulu Amalo Ahmadu, Sabo Birninkudu Ibrahim and Bala Boyi Bukata

Reaching Function Based PID Control of Electromagnetic Levitation System ..... N/A
Mohammed Ahmed

FES-Supported Revived STS with FLC ..... N/A
Mohammed Ahmed

Impact of Distributed Generations on Power Systems Stability: A Review..... 99
Abel Airoboman and Adeleke Aderibigbe

Review of the Performance of the Power Sector in Some Selected African Countries..... 104
Abel Airoboman, Ayodeji Salau and Megha Chhabra

Proposed Automatic Number Plate Recognition System using machine learning 109
Faridah Abdul Aiyelabegan, Chukwu Chibuzor Emmanuel, Sadiq Thomas, Fatima Adam Imam, Halima Haruna Ginsau and Fidelis Onah

A Review of Planning of Integrated Energy System in Nigeria..... 114
Abimbola Ajagun, Xiaorong Sun and Xueping Pan

A Low-Cost Orthosis Using a Compliant Spring Mechanism for Post-Stroke Hand Rehabilitation..... 119
Oluwasegun Akinniyi, Kayode Ayodele, Morenikeji Komolafe, Matthew Olaogun, Daniel Owolabi, Muhsin Fajimi, Michael Macaulay and Kolawole Ogunba

Technical Losses Computation of a Typical Nigerian Radial Distribution Feeder using the Forward/Backward Sweep Approach..... 123
Mudathir Akorede, Oladimeji Ibrahim, Abdulrahman Otuoze, A. S. Oladeji, A. O. Zubair and M. O. Tijani

Application of UAV-Assisted 5G Wireless Communication: A Case Study of the Nigerian Environment..... 128
Christopher Akinyemi Alabi, Oluwaseun Olayinka Tooki, Agbotiname Lucky Imoize and Nasir Faruk

LPG Leakage and Smoke Detector System with a wide Range of Mobile Notification and Auto Power Supply Cut-off ..... N/A
Ridwan Alabi, Isah Abubakar, Usman Dodo, Jesse Zarmai, Abdullahi Sada, Mustapha Dodo and Timothy Akoji

Supervised learning based intrusion detection for SCADA systems 141
Oyeniyi Akeem Alimi, Khmaies Ouahada, Adnan M. Abu-Mahfouz, Suvendi Rimer and Kuburat Oyeranti Adefemi Alimi

Machine Learning Based Intrusion Detection on Complex Nested Transactional SQL Queries 146
Garba Aliyu, George Thandekkattu, Idris Abdulmumin, Usman A. Baba, Aminat Bolatito Yusuf and Mustapha Nasir

Development of An Enhanced Home Automation System For Energy Saving Using GSM, IoT and Bluetooth Technologies 151
Haruna Abubakar Aliyu, Adegboye Araoye Babatunde, Tola Omokhafe James, Lanre Olatomiwa and Umar Suleiman Dauda

A Review of Deep Learning Techniques for Network Intrusions Detection 156
Funso Alowolodu, Adebayo Adetunmbi, Josephine Mebawondu and Jacob Mebawondu

Proactive Fuzzy-Based Backup Channel Selection Scheme for Spectrum Handoff in Cognitive Radio 161
Emmanuel Alozie, Faruk Nasir, Abdulkarim A. Oloyede, Olugbenga A. Sowande, Agbotiname Lucky Imoize and Abubakar Abdulkarim

Tech Mining Analysis: Renewable Energy Forecasting Using Artificial Intelligence Technologies 165
Mutaz Alshafeey and Csaba Csáki

Power quality factors mitigation on NORED distribution network: A case study of JEDS Campus, Ongwediva 170
Helena Amadhila, Odunayo Imoru and Tom Wanjekeche

Implementation Of a Web Application For Stakeholder Inclusion For Sustainable Waste Management 175
Emmanuel Chukwudi Amadi, Gloria Chukwudebe, Ikerionwu Charles, Kennedy Chinedu Okafor and Ignetius Ikechukwu Ayogu

Fault Analysis of South Eastern Nigerian Power System Network 180
Ejikeme Amako and Jessica Onwuzuruike

A Comparative analysis of the phases of a three-phase Prepaid meter on some selected Loads 185
Henry Amhenrior

An Interference Management System for a Shared Spectrum Access Network. 190
Ehinomen Atimati, David Crawford, Robert Stewart, Ifeyinwa Achumba, Longinus Ezema and Uchenna Diala

Magnet Varieties and its Characteristics on the Performance of Dual Stator Permanent Magnet Machine 195
Chukwuemeka Awah

Magnetic Materials' Impact on Loss and Efficiency Profiles of Dual Stator Permanent Magnet Machine 200
Chukwuemeka Awah

Performance Evaluation of Feature Selection Techniques for Credit Default Prediction 205
Ikechukwu Ignatius Ayogu, Olugbemiga Solomon Popoola, Olamatanmi Josephine Mebawondu, Chukwuemeka Christian Ugwu and Adebayo Olusola Adetunmbi

A Modified Visual Simultaneous Localisation and Mapping (V-SLAM) Technique for Road Scene Modelling 210
Jibril Abdullahi Bala, Steve Adeshina and Abiodun Musa Aibinu

Fuzzy Logic based Fed Batch Fermentation Control Scheme for Plant Culturing 215
Jibril Abdullahi Bala, Taliha Abiodun Folorunso, Majeed Soufian, Abiodun Musa Aibinu, Olayemi Mikail Olaniyi and Nimat Ibrahim

A Fuzzy Logic Control Scheme for Electric Automotive Water Pumps 220
Jibril Abdullahi Bala, Ndukwe Okpo Kalu, Suleiman U. Hussein and Taliha Abiodun Folorunso

Smell Agent Optimization Based Supervisory Model Predictive Control for Energy Efficiency Improvement of a Cold Storage System 225
Adesola Bankole, Stephen Moses and Tahir Ibitoye

The Computer Farmer Concept: Human-cyberphysical Systems for Monitoring and Improving Agricultural Productivity in Nigeria 230
Kosisochukwu Pal Nnoli, Mbadiwe Samuel Benyeogor, Oladayo Olufemi Olakanmi and Doris Augustine Umanah

Energy-Mix Dynamic for Optimization of Power Generation Strategy and Expansion In a developing Economy Growth 238
Lucky Braide and D. C. Idoniboyeobu

Power Allocation Optimization in NOMA System for User Fairness in 5G Networks 243
Chekwas Chikezie, Michael David and Abraham Usman

Selected Microcontrollers and Sensors Analysis for Electrical Energy Metering Circuits ... 247
Folasade Dahunsi, Denis Awosika, Sodiq Eniola and Charles Udekwe

Accuracy Assessment of Machine Learning Algorithm(s) in Thyroid Dysfunction Diagnosis 252
Kwetishe Joro Danjuma, Gregory Maksha Wajiga, Etemi Joshua Garba, Asabe Sandra Ahmadu and Olumide Babatope Longe

Optimization of Standalone Hybrid Power System Incorporating Waste-to-electricity Plant: A Case Study in Nigeria 257
Usman Dodo, Evans Ashigwuike and Jonas Emechebe

Municipal Solid Waste Generation Forecast using an ARIMA Model: A Focus on Abuja City, Nigeria 262
Usman Dodo, Evans Ashigwuike and Jonas Emechebe

Multi-Label Classification of Hate-speech Severity on Social Media using BERT Model ... 267
Bakwa Dunka Dirting, Chukwudebe Gloria A, Nwokorie Euphemia C and Ikechukwu Ignatius Ayogu

Smart Irrigation System: A Water and Power Management Approach 272
Michael Edodi, Olugbenga Ogidan and Akinwumi Amusan

Assessing the Vulnerabilities of Internet Users to Cyber-Attacks using their Password Login Patterns 279
Ojonukpe Sylvester Egwuche, Mutiu Ganiyu and Akeem A. Abiona

Decision Support Platform for Production of Chili Using IoT, Cloud Computing and Machine Learning Approach 283
Olakunle Elijah and muazu Jibrin Musa

Development of LoRa-Sigfox IoT Device for Long Distance Applications 288
Olakunle Elijah, Sharul K. A. Rahim, Mu'Azu Jibrin Musa, Yahaya Otuoze Salihu, Mohammed Joda Bello and Man-Yahaya Sani

IoT-Based Wearable Human Protection System 293
Chijioke Emem, Olugbenga K Ogidan and Momoh-Jimoh Salami

Review of Agricultural Unmanned Aerial Vehicle Obstacle Avoidance System 298
Uche Emmanuel

A Blockchain-Based Peer-To-Peer Energy Trading Platform For Distributed Energy Resources 302
Edmund Enyinnia, Joseph Dada and Omitola Olusegun

A Drowsiness Detection Decision Support System using Self Organising Map 307
Temitayo Fabunmi, Adedayo Ojo and Saheed Lekan

COVID-19 Vaccination Acceptability Survey among Staff and Students in Nigerian Universities 311
Fina Faithpraise, Faithpraise B. Otosi, Agnes U. Enang, Effiong O. Obisung, Eme J. Effiong and Emmanuel Inah

IPSODAC: Automated Protection of Images in Social Networks Using Sensitive Object Detection and Access Control ..... N/A
Olorunjube Falana, Carolyn Tinubu, Dada Aborisade, Charles Ugwunna and Ibukunoluwa Salau

Blended Learning Environments: An Exploratory Study of e-Learning Implementation in Nigeria Tertiary Institutions Due to COVID-19 Pandemic 332
Hussain Habeebllahi Farayo, Abdulkarim. A. Oloyede, Nasir Faruk, Salisu Garba, Abdulkadir Idris and Hussaini Alhaji Hassan

CDMA Deployment in Developing Countries: What Went Wrong in Nigeria? 336
Nasir Faruk, Abdulkarim Oloyede, Shamsudeen Adeniyi, Abdulazeez Kanya Rislan and Salisu Garba

Analysis of GSM, Wi-Fi and LPWAN communication technologies for Smart energy metering circuits 341
Dahunsi Folasade, Ijadunola Hameed, Adegoke Melodi and Akinlolu Ponnle

Impact of Energy Literacy on Energy Consumption, Expenditure and Management 346
Tlotlo Shenaz Force and Omowunmi Mary Longe

Deployment, Standardization and Regulatory Challenges Of 5G Services In Africa: Nigeria As A Case Study 351
Idris Mohammed Garba, Omotayo Oshiga and Lawal Bello

Smart Gunshot Detection and Reporting Framework 356
Ibrahim Hamidu, Muhammad Aliyu Suleiman and Ibrahim Abdullahi

Digital Smart-Grid Mobile-Renewable Energy-Services Usage in Nigeria 5G-Readiness Arrangement 359
Abdullahi Hassan Birnin Kudu, Wan Rozaini Sheik Osman and Hapini Awang

A Web-Based Hybrid Blockchain Network Model for Securing University Academic Records 362
Ibeneme-Sabinus Ifeoma and Emmanuel Amadi

Fault Diagnosis in a Three-phase Induction Motor Using Enhanced Park Vector Approach 367
Sunday Igoche, Babatunde Adegboye, Odunayo Imoru and Tola Omokhafe

The Role Of Energy Harvesting In 5G Wireless Networks Connectivity 373
Abdullahi Ijala Danjuma, Sadiq Thomas and Bukola Babatunde Adetokun

Spectral Efficiency Bounds of Cell-Free Massive MIMO Assisted UAV Cellular Communication 378
Agbotiname Lucky Imoize, Hope Ikoghene Obakhena, Francis Ifeanyi Anyasi, Michael Adedosu Adelabu, Kavitha K.V.N and Nasir Faruk

Large-scale Signal Attenuation and Shadow Fading Measurement and Modelling for Efficient Wireless Network Design and Management 383
Joseph Isabona, Rotimi Kehinde, Agbotiname Lucky Imoize, Stephen Ojo and Nasir Faruk

Integrating Local Search Methods in Metaheuristic Algorithms for Combinatorial Optimization: The Traveling Salesman Problem and its Variants 388
Jeremiah Isuwa, Abdullahi Mohammed, Sahabi A. Yusuf, Nuruddeen I. Muhammad, Baffa S. Garko and Muhammad Y. Haruna

Benefits of Smart Devices and Grid-tied Minigrids on the Nigerian Electricity Supply Industry 393
Preye Ivry, Muhammad Buhari and Muhammad Mubarak

Secret message protection using fuzzy logic and difference expansion in digital images 398
Ntivuguruzwa Jean De La Croix, Chaidir Chalaf Islamy and Tohari Ahmad

Implementation of an Embedded Masked Face Recognition System using Huskylens System-On-Chip Module 403
Okokpujie Kennedy, Anicho-Okoro Chiamaka, Okokpujie Imhade Princess and Okesola Julius Olatunji

Synthesis and Optical Properties of Graphene as Electron and Hole Transporting Layer in Solar Cells ..... N / A
M.A Haruna Ladan, A.D.A Buba, Madina Umar and Ahmad Umar

Electrical Properties and the Microscopic and Spectroscopic Analysis of Two-Dimensional Graphene ..... N/A
M.A Haruna-Ladan, A.D.A Buba, Madina Umar and Ahmad Umar

Application of Firefly Algorithm to the Optimal Siting and Sizing of D-STATCOM in Distribution Networks 420
Mela Lashiru Ibn Lele, Ganiyu Bakare, Aliyu Usman and Mustapha Musa

Modelling and Optimization of Smart Traffic Light Control System. 425
Nosike Maduka, Isah Ajibade and Mannir Bello

The conceptualisation of a Configurable Consent Architecture for Personal Data Release . 430
Uche Mbannaso and Adetola Sogbesan

Design and Implementation of a 5 kVA Solar Photovoltaic System for the Electronics Laboratory in Covenant University 435
Emmanuel Mbaya, Koto Omiloli, Kingsley Anagor, Ekong Kennedy, Emuesiri Esisio, Oghorchukwuyem Obiazi, Olisaemeka Isife, Joachim Notcker, Ayokunle Awelewa and Isaac Samuel

A Smell Agent Optimization Approach to Capacitated Vehicle Routing Problem for Solid Waste Collection 440
Olusesi Meadows, Mohammed Mu'Azu and Ahmed Salawudeen

A Linear Quadratic Regulator Based Speed Control for Remote-Controlled Racing Cars . . 445
Olusesi Ayobami Meadows, Arthur Rodriguez and Ahmed Tijani Salawudeen

Network Intrusion Detection Models based on Naives Bayes and C4.5 Algorithms 450
Olamatanmi Josephine Mebawondu, Olugbemiga Solomon Popoola, Ikechukwu Ignatius Ayogu, Chukwuemeka Christian Ugwu and Adebayo Olusola Adetunmbi

Techno-Economic Analysis of Hybrid PV-Wind-Diesel-Battery Standalone and Grid-Connected Microgrid for Rural Electrification in Zimbabwe 455
Simbarashe Mhandu and Omowunmi Longe

LOAD FREQUENCY CONTROL OF A MICROGRID USING FRACTIONAL ORDER PID CONTROLLER 460
Chibuoke Michael, Omokhafe Tola, Nwohu Ndubuka and Ambafi James

Machine Learning Approach to Anti-Money Laundering: A Review 466
Habiba Nasir Mohammed, Nasir Shehu Malami, Sadiq Thomas, Faridah Abdul Aiyelabegan, Fatima Adam Imam and Halima Haruna Ginsau

Impact of Solar Photovoltaic Generation (SPVG) on Distribution Networks: A case study of Minna town 33/11kV Injection substation. 471
Haruna Mohammed, Mark Nwohu, James Ambafi and Abubakar Ahmad

A Design-to-Test Technique for Inclusion Coefficients in AI-Driven Systems 476
Yusuf Mshelia, Simon T. Apeh, Charles Ikerionwu, Nachamada Blamah, Azubuike I. Erike and Florence Elei

Learning from Small Datasets: An Efficient Deep Learning Model for Covid-19 Detection from Chest X-ray Using Dataset Distillation Technique 481
Aminu Musa, Fatima Muhammad Adam, Umar Ibrahim and Abubakar Yakubu Zandam

Effect of Inspired CR-NOMA Power Allocation on Bit Error Rate For Three User NOMA system 487
Abdullahi Musa Auyo, Suleiman Aliyu Babale and Lawal Muhammad Bello

Optimal Deployment of DG and D-STATCOM using Month Flame Optimization Algorithm in Radial Distribution System 492
Musa Mustapha, Bakare Ayinde Ganiyu, Yau Shuaibu Haruna and Adulkadir Isa Itopa

Data Clustering for Optimal Photovoltaic-Distributed Generation Placement in an Active Distribution Network 497
Franklin Nkado, Ifedayo Oladeji, Fredrick Nkado and Ramon Zamora

Comparison between PV and PQ Operating Modes of DG on Stability and Voltage Profile Enhancement of Distribution Systems 502
Fredrick Nkado and Franklin Nkado

Design of Intelligent and Secure Hospital Appointment Scheduling System 507
Adamu Noma, Kabiru Musa, Hussaini Mamman, Abdulkadir Mato, Abdulkarim Yusuf and Mohammed Sambo

A LINDDUN-Based Privacy Threat Modelling for National Identification Systems 512
Livinus Obiora Nweke, Mohamed Abomhara, Sule Yildirim Yayilgan, Debora Comparin, Olivier Heurtier and Calum Bunney

Large-Scale Solar Power in Nigeria: The Case for Floating Photovoltaics 520
Oyinlolu A. Odetoye, Francis A. Ibikunle, Paul K. Olulope, Uchenna N. Okeke and John O. Onyemenam

The Role of Power Electronics In Renewable Energy System 525
Oghorada Oghenewvogaga, Bukola BabatundeÂ adetokun, Bawa Garshima Gamiya and Ahmed Bolaji Nagode

Web-Based Automated Control and Monitoring Of Water Distribution System 530
Olugbenga Ogidan, Moses Olla and Isaac Odey

Automated temperature scanner sensor in comparison with mercury-in-glass thermometer 535
Olugbenga Kayode Ogidan, Olusola Oloruntoba, Olusola Babalola, Oluwatobiloba Ajagunna and Moses Ajewole

An IoT Solution for Air Quality Monitoring and Hazard Identification for Smart City Development 541
Reginald Ogu, Gloria Chukwudebe, Ifeyinwa Achumba, Nkwachukwu Chukwuchekwa and Chinomso Okoronkwo

A Survey on Electronic Voting On Blockchain 546
Kelechi Ohammah, Sadid Thomas, Obadiah Ali, Sadiq Mohammed and Yusuf Sahabi Lolo

Evaluation of Thermal Comfort in a Multi-Occupancy Office using Polak-Ribiére Conjugate Gradient Neuro-Algorithm 550
Adedayo Ojo and Moses Onibonoje

Performance Analysis of BFGS Quasi-Newton Neuro Algorithm for the Design of 30 GHz Patch Antenna for 5G Applications 555
Adedayo Ojo and Moses Onibonoje

Cost Optimization of Hybrid Solar / Heat Pump Water Heating System: Model Formulation 560
Ayodeji Okubanjo, Godswill Ofualagba and Patrick Oshevire

Efficacy of some Unpopular PathLoss Propagation Models in the VHF and UHF Bands .. 565
Lagodo Hafis Olajuwon, Nasir Faruk, Abdulkarim A. Oloyede, Olugbenga Sowande, Abubakar Abdulkarim, Lukman A. Olawoyin and Yinusa A. Adediran

Semantic relation evaluation of data science articles for cybersecurity using network of mention 570
Taiwo Olaleye, Folurera Ajayi, Adewale Aromolaran, Ilesanmi Solanke, Segun Akintunde and Jonhbosco Agbaegbu

Adoption of Photovoltaic Technologies in Nigeria: A Study of Issues, Problems and Solutions 579
Olanrewaju Olanite and Mark Nwohu

Development of Bluetooth Enabled Switching Device for Handoff Selection in Multiple Operators Enabled SIM Card System 584
Mutiat Olanrewaju, Abiodun Musa Aibinu, Samuel Adakole and Afeez Olalekan Azeez

Combating Network Intrusions using Machine Learning Techniques with Multilevel Feature Selection Method 589
Tosin Comfort Olayinka, Chukwuemeka Christian Ugwu, Omoibu Joseph Okhuoya, Adebayá Olusála Adetunmbi and Olugbemiga Solomon Popoála

Digital transformation in Nigeria: The prospects and challenges of the gig economy 594
Kunle Olorundare, Adedeji Olowe and Adebimpe Olorundare

Development of a Low-Cost Wireless Environmental Monitoring System 599
Abdulkarim Oloyede, Nasir Faruk, Abdulkarim Abubakar, Adetola Sogbesan, Salisu Garba and Lukman A. Olawoyin

International Standards and Development Mechanism, Architecture and Services for RSTT: Challenges and Future Research Direction 604
Abdulkarim. A. Oloyede, Nasir Faruk, Abisola Rukayat Hassan, Salisu Garba, Rislan Kanya Abdulazeez and Olugbenga. A. Sowande

Descriptive and Diagnostic Analysis of NASA and NiMet Big Weather Data 609
Opeyemi Oloyede, Simeon Ozuomba and Philip Asuquo

Development Of a Web-Based Platform For Heart Disease Prediction (Diagnosis) Using Machine Learning ..... N/A
Oshin Oluwadamilola, Okokpujie Kennedy and Onaeko Iyinoluwa John

Location-based Distribution of Network Towers using Spatial Analysis 621
Joshua Onolemhemhen, Opeyemi Osanaiye, Bukola Babatunde Adetokun and Oje Abdul-Quadri

Smart Grid Reliability Computation- A Solution to Ageing Infrastructure in Nigerian Power Grid 626
Rapheal Onoshakpor, K. C. Okafor and Modukpe Gabriel

Using Twitter Sentiment Analysis for Sustainable Improvement of Business Intelligence in Nigerian Small and Medium-Scale Enterprises 631
Ugochukwu Orji, Modesta Ezema, Jideofor Ujah, Ponsak Bande and Jonathan Agbo

Machine Learning Models for Predicting Bank Loan Eligibility 636
Ugochukwu Orji, Chikodili Ugwuishiwu, Joseph Nguemaleu and Peace Ugwuanyi

Applications, Challenges and Future Trends towards Enabling Internet of Things for Smart Energy Systems 641
Efe Orumwense and Khaled Abo-Al-Ez

Comparative Analysis of Machine Learning Models for Network Intrusion Detection 648
Edosa Osa and Oghenevbaire Efevberha Ogodo

Design and Implementation of Obstacle Detection System for An Unmanned Aerial Vehicle 653
E.A Otsapa, S.M Sani and O. A Ayofe

Performance Assessment of 407kW Photovoltaic Power System 658
Michael Paul Okpe, Bukola Babatunde Adetokun and Oghenewvogaga Oghorada

Embedded Systems Application and Network in Water Utility Systems 663
Martin Peter, Sadiq Thomas and James Agajo

An Iterative k-means++ and Ant Colony Clustering Scheme for Vehicular Networks 668
Kayode Popoola, David Grace, Tim Clarke and Muheeb Ahmed

An Evolutionary Approach Towards Achieving Enhanced Intrusion Detection System 673
Olugbemiga Solomon Popoola, Ikechukwu Ignatius Ayogu, Olamatanmi Josephine Mebawondu, Chukwuemeka Christian Ugwu and Adebayo Olusola Adetunmbi

Design and Implementation of Obstacle Detection And Warning System For Visually Impaired People 678
Yusuf Sahabi Lolo, Kelechi Lawrence Ohammah, Amina Alfa, Halima Ginsau, Ali Obadiah and Sadiq Abubakar

Modern Methods For Solving Weighted Minimum Spanning Tree Problems 683
Ahmed Tijani Salawudeen, Bashir Baba Abba, Issaku Ibrahim, Muhammad Mustapha Muhammad and Tajudeen Humble Sikiru

The Impact of Communication Technologies On The Smart Grid 688
Jaafaru Sanusi, Oghorada Oghenewvogaga, Bukola BabatundeÂ adetokun and Aminu Muhammad Abba

Machine Learning Approach to Improving Operating System Process Scheduling . . . . . N/A
Nasir Shehu Malami, Fidelis Onah, Fatima Imam, Kelechi Ohammah, Habiba Nasir Mohammed and Halima Ginsau

Quantum-resistant University Credentials Verification System on Blockchain 698
Mahendra Shrivas, Srujan Kachhwaha, Ashok Bhansali and Satya Singh

Short Circuit Analysis of Benin Sub-Region 132 kV Transmission Network for Distance Protection Scheme 704
Igberaese Simon, Jacob Tsado, Jonathan Kolo and Umar Dauda

Design of a 3.8-GHz Microstrip Patch Antenna for Sub-6 GHz 5G Applications 709
Olugbenga Sowande, Francis E. Idachaba, Sunday C. Ekpo, Nasir Faruk, Noushin Karimian, Olugbenga Ogunmodimu, Abdulkarim A. Oloyede, Lukman A. Olawoyin and Sulyman A. Abdulkareem

IoT-Based Home Automation System with Covid-19 Detector 714
Mariam Sulleiman and Jacob Tsado

Performance Analysis of OFDM signal using Different Modulation Schemes with Least Square Channel Estimation Technique 719
Michael Tarerefa, Ayibapreye Kelvin Benjamin and Waterway Deinmodei

Performance Analysis of a PMSM for Traction Applications in Electric Vehicles with Hairpin Winding Technology 723
Omokhafe Tola, Edwin Umoh, Ambafi James and Olusegun Osinowo

An Embedded Fuzzy Logic Based Smart Street Lighting System 728
Geofrey Twesigye, Alexander Ngenzi and Emmanuel Ndashimye

A Bi-Factor Biometric Authentication System for Secure Electronic Voting System 733
Buhari Ugbede Umar, Olayemi Mikail Olaniyi, Abisoye Blessing Olatunde, Ademoh Agbogunde Isah, Arifa Khatoon Haq and Isaac Taiye Ajayi

Towards Determining the Effect of Age and Educational Level on Cyber-Hygiene 738
Celestine Ugwu, Casmir Ani, Modesta Ezema, Caroline Asogwa, Uchenna Ome, Adaora Obayi, Deborah Ebem, Aminat Atanda and Elochukwu Ukwandu

Performance Analysis of a Ball-on-Sphere System using Linear Quadratic Regulator Controller 743
Abubakar Umar and Zaharuddeen Haruna

A Topology for Fingerprint Image Encryption based on HDWT-SVD and Hyperchaos 748
Edwin Umoh and Ogechukwu Iloanusi

Chaos Theory Applied to Cascading Disaster Dynamics, Modelling and Control 753
Edwin Umoh, Musa Umar and Muhammed Umar

A Simplified Method for Extended Duration Measurements of Mobile Broadband Performance 757
Vincent Umoh, Ubong Ukommi and Unwana Ekpe

LoRa Network Planning Using Empirical Path Loss Models 762
Uyoata Uyoata

Performance Analysis of a Dynamic Voltage Restorer using two Compensation Strategies for Voltage Sag Mitigation. 767
Shayan Zafar, Fredrick Nkado and Franklin Nkado