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Judul Jurnal Ilmiah (Artikel) : Conflict-free dynamic route multi-AGV using dijkstra floyd-warshall hybrid algorithm with time windows
 Jumlah Penulis : 3 orang (Solichudin, Aris Triwiyatno, Munawar A. Riyadi)
 Status Pengusul : penulis ke-2
 Identitas Jurnal Ilmiah : a. Nama Jurnal : International Journal of Electrical and Computer Engineering (IJECE)
 b. Nomor ISSN : ISSN 2088-8708, e-ISSN 2722-2578
 c. Vol, No., Bln Thn : Vol 10, No 4, August 2020, Pp. 3596-3604
 d. Penerbit : Institute of Advanced Engineering and Science (IAES)
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Semarang, 10 Agustus 2020

Reviewer 2



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Semarang, 10 Agustus 2020
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International Journal of Electrical and Computer Engineering
Volume 10, Issue 4, 2020, Pages 3596-3604

Conflict-free dynamic route multi-agv using dijkstra Floyd-warshall hybrid algorithm with time windows (Article) (Open Access)

Solichudin ✉️, Triwiyatno, A., Riyadi, M.A. 🔍

Department of Electrical Engineering, Faculty of Engineering, Diponegoro University, Indonesia

Abstract

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Autonomous Guided Vehicle is a mobile robot that can move autonomously on a route or lane in an indoor or outdoor environment while performing a series of tasks. Determination of the shortest route on an autonomous guided vehicle is one of the optimization problems in handling conflict-free routes that have an influence on the distribution of goods in the manufacturing industry's warehouse. Pickup and delivery processes in the distribution on AGV goods such as scheduling, shipping, and determining the route of vehicle with short mileage characteristics, is very possible to do simulations with three AGV units. There is a windows time limit on workstations that limits shipping. The problem of determining the route in this study is considered necessary as a multi-vehicle route problem with a time window. This study aims to describe the combination of algorithms written based on dynamic programming to overcome the problem of conflict-free AGV routes using time windows. The combined approach of the Dijkstra and Floyd-Warshall algorithm results in the optimization of the closest distance in overcoming conflict-free routes. Copyright © 2020 Institute of Advanced Engineering and Science. All rights reserved.

SciVal Topic Prominence ⓘ

Topic: Automated Guided Vehicles | Material Handling System | Makespan

Prominence percentile: 91.111 ⓘ

Author keywords

Conflict-free route Dynamic programming Hybrid algorithm Multi-AGV Time windows

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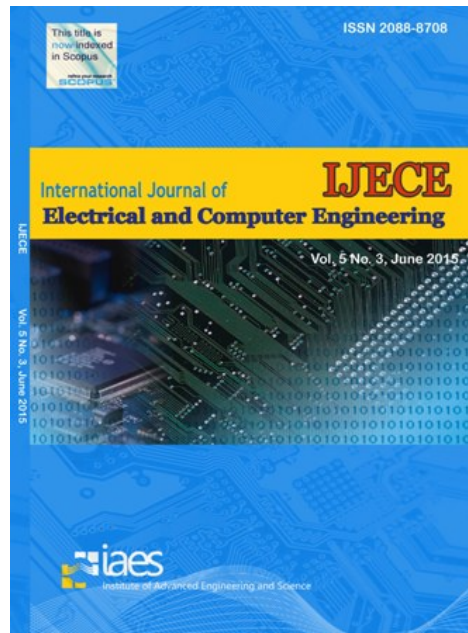


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JOURNAL CONTENT

Search
 Search Scope
 All

Browse

- By Issue
- By Author
- By Title

INFORMATION

- For Readers
- For Authors
- For Librarians



HOME ABOUT LOGIN SEARCH CURRENT ARCHIVES ANNOUNCEMENTS

Home > About the Journal > **Editorial Team**

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- Abstracting and Indexing
- Focus and Scope
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- **Online Submissions**
- Publication Ethics
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JOURNAL CONTENT

Search
Search Scope
All

Browse

- By Issue
- By Author
- By Title

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- For Authors
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HOME ABOUT LOGIN SEARCH CURRENT ARCHIVES ANNOUNCEMENTS

Home > Archives > Vol 10, No 4

Vol 10, No 4

August 2020

DOI: <http://doi.org/10.11591/ijece.v10i4>

Table of Contents

Analysis of direct power control AC-DC converter under unbalance voltage supply for steady-state and dynamic response	PDF 3333-3342
Nor Azizah Mohd Yusoff, Azziddin M. Razali, Kasrul Abdul Karim, Raja Nor Firdaus Kashfi, Raja Othman, Auzani Jidin, Nor Aishah Md Zuki, Nurfaezah Abdullah	
Total views : 334 times	
Comparative study of the price penalty factors approaches for Bi-objective dispatch problem via PSO	PDF 3343-3349
Mohammed Amine Meziane, Youssef Mouloudi, Abdelghani Draoui	
Total views : 113 times	
Optimized placement of multiple FACTS devices using PSO and CSA algorithms	PDF 3350-3357
Basanagouda Patil, S. B. Karajgi	
Total views : 260 times	
Hybrid method for achieving Pareto front on economic emission dispatch	PDF 3358-3366
Kummari Rajesh, N. Visali	
Total views : 167 times	
Voltage profile enhancement in distribution network using static synchronous compensator STATCOM	PDF 3367-3374
Mohammed Yahya Suliman	
Total views : 240 times	
Loss allocation in distribution networks with distributed generators undergoing network reconfiguration	PDF 3375-3383
Ambika Prasad Hota, Sivkumar Mishra	
Total views : 165 times	
A comparison of single phase standalone square waveform solar inverter topologies: half bridge and full bridge	PDF 3384-3392
Aicha Chemseddine, Nouredine Benabadj, Ali Cheknane, Salah Eddine Mankour	
Total views : 233 times	
Enhancement of power quality using microprocessor based shunt active power filter for unbalanced load	PDF 3393-3402
Madhu B. R., Dinesh M. N., Tsewang Thinlas, Deril Menezes	
Total views : 123 times	
A feasibility study of electrical energy generation from municipal solid waste in Iraq: Najaf case study	PDF 3403-3411
Othman M. Anssari, Esam A. Alkaidy, Naseem Almudhaffar, Abbas Nasir AlTae, Nabeel Salih Ali	
Total views : 163 times	
Active power output optimization for wind farms and thermal units by minimizing the operating cost and emissions	PDF 3412-3422
Nazha Cherkaoui, Abdelaziz Belfqih, Faissal El Mariami, Jamal Boukherouaa, Abdelmajid Berdai	
Total views : 146 times	
Performance enhancement of DC/DC converters for solar powered EV	PDF 3423-3430
Nagaraj S., Ranihemamalini R., Rajaji L.	
Total views : 162 times	
Solving practical economic load dispatch problem using crow search algorithm	PDF 3431-3440
Shaimaa R. Spea	
Total views : 74 times	
Fuzzy logic applications for data acquisition systems of practical measurement	PDF 3441-3450
Muhammad Haddin, Arief Marwanto, Agus Suprajitno, Munaf Ismail	
Total views : 218 times	

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- Scilit
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- Scopus

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Search
 Search Scope
 All

Browse




















- By Issue
- By Author
- By Title




















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- For Readers
- For Authors
- For Librarians








Tactical approach to identify and quarantine spurious node participation request in sensory application	PDF
Somu Parande, Jayashree D. Mallapur	3451-3459
 Total views : 58 times	
Design of smart wireless changeover for continuous electric current feeding from power sources of variable capacities	PDF
Haider A. H. Alobaidy, Hikmat N. Abdullah, Tariq M. Salman	3460-3467
 Total views : 95 times	
Design of probe for NQR/NMR detection	PDF
Preeti Hemnani, A. K. Rajarajan, Gopal Joshi, S. V. G. Ravindranath	3468-3475
 Total views : 101 times	
Hybrid branch prediction for pipelined MIPS processor	PDF
Ali S. Al-Khalid, Safaa S. Omran	3476-3482
 Total views : 95 times	
The design of IPT system for multiple kitchen appliances using class E LCCL circuit	PDF
N. X. Yin, Shakir Saat, S. H. Husin, Y. Yusop, M. R. Awal	3483-3491
 Total views : 80 times	
Analyzing and evaluating the energy efficiency based on multi-5G small cells with a mm-waves in the next generation cellular networks	PDF
Mohammed H. Alsharif, Khalid Yahya, Shehzad Ashraf Chaudhry	3492-3500
 Total views : 106 times	
Enhancing the CRI and lumen output for the 6600 K WLED with convex-dual-layer remote phosphor geometry by applying red-emitting MGSr3Si2O8:Eu2+, Mn2+ phosphor	PDF
Thuc Minh Bui, Nguyen Thi Phuong Loan, Phan Xuan Le, Nguyen Doan Quoc Anh, Anh Tuan Le, Le Van Tho	3501-3507
 Total views : 117 times	
Water monitoring and analytic based thingspeak	PDF
Abbas Hussien Miry, Gregor Alexander Aramice	3588-3595
 Total views : 137 times	
Conflict-free dynamic route multi-AGV using dijkstra floyd-warshall hybrid algorithm with time windows	PDF
Solichudin Solichudin, Aris Triwiyatno, Munawar A. Riyadi	3596-3604
 Total views : 140 times	
Speaker specific feature based clustering and its applications in language independent forensic speaker recognition	PDF
Satyanand Singh, Pragya Singh	3508-3518
 Total views : 132 times	
Reversible color video watermarking scheme based on hybrid of integer-to-integer wavelet transform and Arnold transform	PDF
Fahad Layth Malallah, Awatif Ali Jafaar, Nidaa Hasan Abbas, Mustafa Ghanem Saeed	3519-3527
 Total views : 179 times	
ELM and K-nn machine learning in classification of breath sounds signals	PDF
Z. Neili, M. Fezari, A. Redjati	3528-3536
 Total views : 111 times	
Measuring information credibility in social media using combination of user profile and message content dimensions	PDF
Erwin B. Setiawan, Dwi H. Widyantoro, Kridanto Surendro	3537-3549
 Total views : 173 times	
Text hiding in text using invisible character	PDF
Nada Abdul Aziz Mustafa	3550-3557
 Total views : 87 times	
Extracted features based multi-class classification of orthodontic images	PDF
Hicham Riri, Mohammed Ed-Dhahraouy, Abdelmajid Elmoutaouakkil, Abderrahim Beni-Hssane, Farid Bourzgui	3558-3567
 Total views : 114 times	
Bacterial foraging optimization based adaptive neuro fuzzy inference system	PDF
C. Arul Murugan, G. Sureshkumar, Nithiyananthan Kannan, Sunil Thomas	3568-3575
 Total views : 174 times	
Deep-learning based single object tracker for night surveillance	PDF
Zulaikha Kadim, Mohd Asyraf Zulkifley, Nabilah Hamzah	3576-3587
 Total views : 189 times	
Adaptive quantization for spectrum exchange information in mobile cognitive radio networks	PDF
Arief Marwanto, Sharifah Kamilah Syed Yusof, Muhammad Haikal Satria	3605-3614
 Total views : 57 times	
Data loss prevention (DLP) by using MRSH-v2 algorithm	PDF
Basheer Husham Ali, Ahmed Adeb Jalal, Wasseem N. Ibrahim Al-Obaydy Al-Obaydy	3615-3622
 Total views : 140 times	

A data estimation for failing nodes using fuzzy logic with integrated microcontroller in wireless sensor networks	PDF
Saad Al-Azzam, Ahmad Sharieh	3623-3634
 Total views : 90 times	
Performance evaluation of MANET routing protocols based on QoS and energy parameters	PDF
Salma S. Mohamed, Abdel-Fatah I. Abdel-Fatah, Mohamed A. Mohamed	3635-3642
 Total views : 154 times	
A Novel automatic voice recognition system based on text-independent in a noisy environment	PDF
Motaz Hamza, Touraj Khodadadi, Sellappan Palaniappan	3643-3650
 Total views : 93 times	
Detection of the botnets' low-rate DDoS attacks based on self-similarity	PDF
Sergii Lysenko, Kira Bobrovnikova, Serhii Matiukh, Ivan Hurman, Oleg Savenko	3651-3659
 Total views : 84 times	
Acceptance of E-learning among university students in UAE: A practical study	PDF
Ahmad Qasim Mohammad AlHamad	3660-3671
 Total views : 129 times	
Neighborhood search methods with Moth Optimization algorithm as a wrapper method for feature selection problems	PDF
Malek Alzaqebah, Nashat Alrefai, Eman A. E. Ahmed, Sana Jawarneh, Mutasem K. Alsmadi	3672-3684
 Total views : 137 times	
A comprehensive study of distributed Denial-of-Service attack with the detection techniques	PDF
H. H. Ibrahim, A. E. Hamzah, H. A. Saeed, H. H. Qasim, O. S. Hamed, Hussein Yahya Alkhalaf, M. I. Hamza	3685-3694
 Total views : 95 times	
Identity-based threshold group signature scheme based on multiple hard number theoretic problems	PDF
Nedal Tahat, Ashraf A. Tahat	3695-3701
 Total views : 131 times	
Dynamic routing discovery scheme for high mobility in mobile ad hoc wireless networks	PDF
Haider Alani, Maha Abdelhaq, Raed Alsaqour	3702-3714
 Total views : 90 times	
Enhancing OLSR routing protocol using K-means clustering in MANETs	PDF
Y. Hamzaoui, M. Amnal, A. Choukri, Y. Fakhri	3715-3724
 Total views : 150 times	
A hybrid constructive algorithm incorporating teaching-learning based optimization for neural network training	PDF
Mahdie Khorashadzade, Morteza Jouyban, Mohammadreza Asghari Oskoei	3725-3733
 Total views : 166 times	
Text classification based on gated recurrent unit combines with support vector machine	PDF
Muhammad Zulqarnain, Rozaida Ghazali, Yana Mazwin Mohamad Hassim, Muhammad Rehan	3734-3742
 Total views : 103 times	
An adaptation of Text2Onto for supporting the French language	PDF
Morad Hajji, Mohammed Qbadou, Khalifa Mansouri	3743-3750
 Total views : 83 times	
Predicting depression using deep learning and ensemble algorithms on raw twitter data	PDF
Nisha P. Shetty, Balachandra Muniyal, Arshia Anand, Sushant Kumar, Sushant Prabhu	3751-3756
 Total views : 264 times	
Time and resource constrained offloading with multi-task in a mobile edge computing node	PDF
Mohamed El Ghmary, Youssef Hmimz, Tarik Chanyour, Mohammed Ouçamah Cherkaoui Malki	3757-3766
 Total views : 111 times	
Policy resolution of shared data in online social networks	PDF
Nisha P. Shetty, Balachandra Muniyal, Saleh Mowla	3767-3776
 Total views : 102 times	
An automated approach to fix buffer overflows	PDF
Aamir Shahab, Muhammad Nadeem, Mamdouh Alenezi, Raja Asif	3777-3787
 Total views : 137 times	
Electrical power generation through concentrated solar technology for the southern cities of Iraq	PDF
Riyadh Toman Thahab, Ahmed Toman Thahab	3788-3800
 Total views : 108 times	
Condition of phase angle for a new VDGA-based multiphase variable phase shift oscillator from 0° to 90°	PDF
Kasim K. Abdalla	3801-3810
 Total views : 66 times	
Performance evaluation of Map-reduce, jar, pig, hive and spark with machine learning using big	PDF

data	3811-3818
Santosh Jankatti, Raghavendra B. K., Raghavendra S., Meenakshi Meenakshi	
 Total views : 361 times	
Spectral filtering experimentation on photovoltaic cells using novel bio-filter made from copper coated hibiscus-ethanol extract	PDF 3819-3825
Moses E. Emetere, Testimony Gabe-Oji, Durodola B.M.	
 Total views : 91 times	
Classification of emotions induced by horror and relaxing movies using single-channel EEG recordings	PDF 3826-3838
Amir Jalilifard, Amir Rastegarnia, Ednaldo Birgante Pizzolato, Md Kafiul Islam	
 Total views : 127 times	
ω-contraction and some fixed point results via modified ω-distance mappings in the frame of complete quasi metric spaces and applications	PDF 3839-3853
Kamaleldin Abodayeh, T. Qawasmeh, W. Shatanawi, A. Tallafha	
 Total views : 151 times	
Adaptive management of technical condition of power transformers	PDF 3862-3868
Vladimir M. Levin, Ammar A. Yahya	
 Total views : 73 times	
Vertical intent prediction approach based on Doc2vec and convolutional neural networks for improving vertical selection in aggregated search	PDF 3869-3882
Sanae Achsas, El Habib Nfaoui	
 Total views : 101 times	
Formalization of SOA concepts with mathematical foundation	PDF 3883-3888
Asha H. V., Shantharam Nayak, Annamma Abraham	
 Total views : 70 times	
Dynamic resource allocation for opportunistic software-defined IoT networks: stochastic optimization framework	PDF 3854-3861
Sharhabeel H. Alnabelsi, Haythem A. Bany Salameh, Zaid M. Albataineh	
 Total views : 105 times	
Unit vector template generator applied to a new control algorithm for an UPQC with instantaneous power tensor formulation, a simulation case study	PDF 3889-3897
Yeison Alberto Garcés Gómez, Nicolás Toro García, Fredy Edimer Hoyos	
 Total views : 180 times	
A probabilistic multi-objective approach for FACTS devices allocation with different levels of wind penetration under uncertainties and load correlation	PDF 3898-3910
M. EL-Azab, W. A. Omran, S. F. Mekhamer, H. E. A. Talaat	
 Total views : 153 times	
Short-term load forecasting with using multiple linear regression	PDF 3911-3917
Bhatti Dhaval, Anuradha Deshpande	
 Total views : 115 times	
Improved particle swarm optimization algorithms for economic load dispatch considering electric market	PDF 3918-3926
Tan Minh Phan, Phu Trieu Ha, Thanh Long Duong, Thang Trung Nguyen	
 Total views : 184 times	
The maximum power point tracking based-control system for small-scale wind turbine using fuzzy logic	PDF 3927-3935
Quang-Vi Ngo, Chai Yi, Trong-Thang Nguyen	
 Total views : 141 times	
Maximum voltage sag compensation using direct converter by modulating the carrier signal	PDF 3936-3941
S. Abdul Rahman, Gebrie Teshome	
 Total views : 148 times	
The impact of high temperature and irradiance source on the efficiency of polycrystalline photovoltaic panel in a controlled environment	PDF 3942-3947
Julie C. Ogbulezie, Armstrong O. Njok, Manoj Kumar Panjwani, Suresh K. Panjwani	
 Total views : 123 times	
Solar assisted cooling rule in indoor air quality	PDF 3948-3956
Ali M. Baniyounes, Yazeed Y. Ghadi	
 Total views : 54 times	
The quality of data and the accuracy of energy generation forecast by artificial neural networks	PDF 3957-3966
Bogdan Kwiatkowski, Jacek Bartman, Damian Mazur	
 Total views : 71 times	
Source current harmonic mitigation of distorted voltage source by using shunt active power filter	PDF 3967-3977
Muhammad Ossama Mahmoud, Wael Mamdouh, Hamdy Khalil	
 Total views : 67 times	
Advanced energy management system with the incorporation of novel security features	PDF 3978-3987
Raheel Muzzammel, Rabia Arshad, Saba Mehmood, Danista Khan	
 Total views : 141 times	
Dual output DC-DC quasi impedance source converter	PDF

Muhammad Ado, Awang Jusoh, Tole Sutikno, Mohd Hanipah Muda, Zeeshan Ahmad Arfeen	3988-3998
 Total views : 84 times	
Smart monitoring system of Najran dam	PDF
A. H. M. Almawgani, M. A. Alshorman, M. A. Alyami, H. M. Alhmmami, D. S. Almahri, M. A. Alkhuraym, A. H. Alwaseel	3999-4007
 Total views : 260 times	
Review of high-speed phase accumulator for direct digital frequency synthesizer	PDF
Abdulkareem Dawah Abbas	4008-4014
 Total views : 80 times	
Dual-layer remote phosphor structure: a novel technique to enhance the color quality scale and luminous flux of WLEDs	PDF
Phung Ton That, Thuc Minh Bui, Nguyen Thi Phuong Loan, Phan Xuan Le, Nguyen Doan Quoc Anh, Le Van Tho	4015-4022
 Total views : 107 times	
Methodology for detection of paroxysmal atrial fibrillation based on P-Wave, HRV and QR electrical alternans features	PDF
Henry Castro, Juan David Garcia-Racines, Alvaro Bernal-Noreña	4023-4034
 Total views : 152 times	
A new structure of a wide band bridge power limiter	PDF
Khalifa Echchakhaoui, Elhassane Abdelmounim, Jamal Zbitou, Hamid Bennis	4035-4042
 Total views : 130 times	
DC performance analysis of a 20nm gate length n-type silicon GAA junctionless (Si JL-GAA) transistor	PDF
Faiza Merad, Ahlam Guen-Bouazza	4043-4052
 Total views : 80 times	
Test platform for electronic control units of high-performance safety-critical multi actuator systems	PDF
Giovanni Bucci, Fabrizio Ciancetta, Edoardo Fiorucci, Simone Mari	4053-4072
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Conflict-free dynamic route multi-agv using dijkstra Floyd-warshall hybrid algorithm with time windows

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ABSTRACT

Autonomous Guided Vehicle is a mobile robot that can move autonomously on a route or lane in an indoor or outdoor environment while performing a series of tasks. Determination of the shortest route on an autonomous guided vehicle is one of the optimization problems in handling conflict-free routes that have an influence on the distribution of goods in the manufacturing industry's warehouse. Pickup and delivery processes in the distribution on AGV goods such as scheduling, shipping, and determining the route of vehicle with short mileage characteristics, is very possible to do simulations with three AGV units. There is a windows time limit on workstations that limits shipping. The problem of determining the route in this study is considered necessary as a multi-vehicle route problem with a time window. This study aims to describe the combination of algorithms written based on dynamic programming to overcome the problem of conflict-free AGV routes using time windows. The combined approach of the Dijkstra and Floyd-Warshall algorithm results in the optimization of the closest distance in overcoming conflict-free routes.

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1. INTRODUCTION

Vehicle transportation systems based on AGVs have been developed for decades. They are technically advanced and complex. There are many tactical and operational issues which have to be addressed. Decisions related to the design stage have a very large impact on future system performance [1]. This area includes issues such as:

- guide-path design
- estimating the number and location of parking, pick-up and delivery points,
- estimating the number of required vehicles

The second area of problems relating to system management includes the following:

- positioning of idle vehicles,
- vehicle dispatching,
- vehicle routing,
- vehicle scheduling,
- collision and deadlock avoidance

One such interpretation involves the following problem: if a delivery decision is made, the route and schedule must be planned for another AGV, that the purpose of AGV scheduling is to send an AGV set and the route mission is to find a suitable route [2]. But on another interpretation, determining the vehicle route must be in accordance with the order of stations that must be visited by this vehicle. Scheduling also

Analysis of direct power control AC-DC converter under unbalance voltage supply for steady-state and dynamic response

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ABSTRACT

This paper presents an analysis of Direct Power Control (DPC) technique for the Three-Phase Pulse Width Modulation (PWM) AC-DC converter under unbalanced supply condition. Unbalance condition will cause the presence of unbalanced current and voltages thus produce the negative components on the grid voltage as well as severe performance degradation of a grid connected Voltage Source Inverter (VSI). The input structures for conventional DPC has been modified with a three simpler sequence networks instead of coupled by a detailed Three-Phase system method. The imbalance voltage can be resolved by separating from the individual elements of voltage and current into symmetrical components called Sequence Network. Consequently, the input power relatively improved during unbalanced condition almost 70% through the measurement of Total Harmonic Distortion (THD) from the conventional Direct Power Control (DPC) in individual elements which is higher compared to separate components. Hence, several analyses are performed in order to analyze the steady state and dynamic performance of the converter, particularly during the load and DC voltage output reference variations.

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1. INTRODUCTION

Power converter is necessary especially in AC and DC motor control circuits and acts as the link or the transforming stage between the power source and the power supply output [1]. There are several mains of converters based on the source of input voltage and the output voltage and these falls into four categories namely the AC-DC converter known as the rectifier, the DC-AC that named as inverter, the AC-AC converter or frequency changer, and lastly the DC-DC voltage or current converter. Each has its advantages and drawbacks, which determines the suitability for any specific application [2]. However, this research is approach for AC-DC converter for more specific and concern.

AC-DC converter plays an important role in many power electronics system. The vast application of this converter leads to the development of many control techniques. The example of control techniques covers hysteresis current control (HCC), voltage-oriented control (VOC) which similar to the Field Oriented Control (FOC) and Direct Power Control (DPC) which imitates the basic idea of Direct Torque Control (DTC). Each control technique has its own way of controlling the power converters as a result their aims to reduce the harmonics up to some limit [3].

However, these advanced features of PWM AC-DC converters are not fully achieve under the unbalanced three-phase input supply [4]. Thus, it indicates to harmful to all polyphase loads, especially

Detection of the botnets' low-rate DDoS attacks based on self-similarity

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ABSTRACT

An article presents the approach for the botnets' low-rate a DDoS-attacks detection based on the botnet's behavior in the network. Detection process involves the analysis of the network traffic, generated by the botnets' low-rate DDoS attack. Proposed technique is the part of botnets detection system–BotGRABBER system. The novelty of the paper is that the low-rate DDoS-attacks detection involves not only the network features, inherent to the botnets, but also network traffic self-similarity analysis, which is defined with the use of Hurst coefficient. Detection process consists of the knowledge formation based on the features that may indicate low-rate DDoS attack performed by a botnet; network monitoring, which analyzes information obtained from the network and making conclusion about possible DDoS attack in the network; and the appliance of the security scenario for the corporate area network's infrastructure in the situation of low-rate attacks.

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1. INTRODUCTION

Nowadays the cybercriminals implement different ways to obtain the profit from the legitimate businesses, which have become theirs target. Malware are one of the most powerful cybercriminals' tools for attaining such goals [1-2]. One the type of the malicious action against the users' computer systems, cloud infrastructure the distributed denial-of-service (DDoS) attacks—the attempt to disrupt normal traffic of a targeted server, service or network by overwhelming the target or its surrounding infrastructure with a flood of Internet traffic [3].

In the modern cyber world a botnets are the main tool for performing of such type of attacks [4]. The bots of botnets are compromised devices designed to attack a single server, network or application with an overwhelming number of requests, packets or messages. A low and slow attack is a another type of DoS or DDoS attack that relies on a small stream of very slow traffic with requests which can target application or server resources, thereby preventing genuine users from accessing the service. To carry out low and slow attacks cyber attackers can use HTTP headers, HTTP post requests, or TCP traffic.

Unlike a brute-force attacks, the low and slow attacks require very little bandwidth and can be hard to mitigate, as each bot is a legitimate Internet device and generate by them slow attack traffic is very difficult to distinguish from those of legitimate clients [5–6]. One of the way of the low-rate DDoS attacks detecting is the traffic analysis concerning its self-similarity of traffic. This method allows identifying the hidden malicious traffic in real-time.