

1. 6488

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Effect of discharge tube properties on parameters of surface-wave sustained plasma

Streszczenie. Zbadano numerycznie wpływ promienia wewnętrznego i zewnętrznego, przenikalności elektrycznej i temperatury rury wyładowczej na współczynniki propagacji i tłumienia fali elektromagnetycznej oraz temperaturę gazu, temperaturę i gęstość elektronów w mikrofalowym wyładowaniu podtrzymywanym falą powierzchniową o częstotliwości 2,45 GHz w argonie. Do obliczeń wykorzystano dwutemperaturowy model plazmy i założenie o lokalnej osiowej jednorodności wyładowania.

Abstract. The effects of inner and outer radius, permittivity and discharge tube temperature on electromagnetic wave propagation and attenuation coefficients, as well as gas temperature, electron temperature and density in a microwave discharge sustained by a surface wave in argon at 2.45 GHz were numerically investigated. A two-temperature plasma model and the assumption of local axial uniformity of the discharge were used for the calculations. (*Wpływ właściwości rury wyładowczej na parametry plazmy mikrofalowej wytwarzanej przez falę powierzchniową*).

2. 6516

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Detection of acetone as a potential non-invasive diagnosis tool for diabetes patients

Abstract. This work investigated the demonstration of acetone detection device as a potential tool to diagnose diabetes patients. It offers simple and low cost approach based on glass substrate platform. The glass substrate was coated with agarose gel as a sensitive material to increase the sensing response. It has superiority in term of high porosity and capable to absorb molecule around it. The sensing mechanism is based on the change in refractive index (RI) of the agarose gel coating layer when exposed to variation acetone concentration level. This is due to the intensity of the light weakening by absorption and scattering when light propagated through the sensing material. The proposed sensor produces a significant response towards acetone concentrations with the output voltage reduced linearly from 1.6V to 1.2V. The sensitivity and resolution of the agarose coated glass substrate improves by a factor of 1.08 and 1.14 respectively as compared to uncoated glass substrate. It also performed better in term of linearity, stability, response time and hysteresis. The non-involvement of costly laser source based instruments make the proposed sensor become more practical for large production while maintaining a good sensing performances. Based on the experiment results, the proposed acetone sensor has a persuasive potential as an early biomarker for diabetes diagnosis tool.

3. 6533.

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Novel Artificial Intelligence-Dynamic Programming on Infrared Thermometer Based on Internet of Things (IoT)

Abstract. The COVID-19 has changed the way we live and caused the production of innovations for people in the devastating epidemic situation. Healthcare workers are on the front lines who are at higher risk of contracting COVID-19 than other occupations because they must be in close contact with the patient all the time. The paper, the novel artificial intelligence (AI)-dynamic programming algorithm on infrared thermometer based on Internet of things (IoT) is proposed to support the medical personnel. The proposed novel thermometer is divided into three main sections, which are 1) Temperature sensing device, 2) Embedded dynamic programming algorithm, and 3) IoT communication platform. The innovation was designed using dynamic programming algorithm embedment, reducing complex and repetitive processing errors and fast computation. Moreover, it was tested according to the research methodology way. The temperatures were collected within the limited condition test of time, environment condition, and same body organ of volunteer according to the various distances. The experimental results came out with three classified zones: best, moderate, and ineffective distances. In addition, the discussions of the study were also included about the complication factors about sensor's accuracy detection, such as angle detection, and target distance, and focusing of wireless infrared thermometer.

4. 6543

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Forecasting Voltage Collapse When Large-Scale Wind Turbines Penetrated to Power Systems Using Optimally Pruned Extreme Learning Machines (OPELM) - Case Study: Electric Power System South Sulawesi-Indonesia

Abstract. The problem of voltage collapse is a major issue in the operation of the current power system, especially when the penetration of wind turbines into the system continues to increase. The intermittency of the wind turbine has an impact on the stability of the system voltage. Fast Voltage Stability Index (FVSI) is used as a parameter for the condition of the system with the phenomenon of voltage collapse. This study aims to observe and predict the value of the Line stability index using Optimally Pruned Extreme Learning Machine (OP-ELM). The test case in this study is the South Sulawesi-Indonesia Electric Power System, with a total wind turbine penetration of 142 MW. From the simulation, it can be seen that OP-ELM can do forecasting very well with an error rate of 0.0886%.

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5. 6545

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Fuzzy Direct Field Oriented Control of a Double Stator Induction Motor (DSIM) with an MRAS Observer Dedicated to Photovoltaic Pumping System

Abstract This paper presents the Direct Field Oriented Control (DFOC) scheme based on fuzzy logic speed controller without mechanical sensor (MRAS Observer) for a Double Stator Induction Motor fed by a two Pulse Width Modulation (PWM) voltage source inverters, by means of a photovoltaic solar panel using a maximum power point tracking (MPPT) control, dedicated to solar water pumping system (SWPS). So far several types of motors are used for solar water pumping systems and to the authors best knowledge; this is the first attempt to apply DSIM with this proposed control method to such a system. The simulation results show that the direct field oriented control with fuzzy controller and MRAS observer, provides good dynamic performances and presents a great robustness and efficiency

6. 6548

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Investigation on Characteristics of Metamaterials by Using Metallic Rod Structure for Antenna Engineering

Abstract. In this research, the investigation of metallic rod type metamaterials is presented. In the study, the simulation and numerical analysis are performed to analyze the classification of metamaterials when the metallic rods are arranged in various patterns, including permittivity, permeability and reflection index. From the simulation and numerical results, it was found that metallic rod is classified in epsilon near zero characteristics when metallic rods are arranged with double and three layers. Electromagnetic properties of proposed structure are electromagnetic band gap and partially reflective surface at the designed frequency. In addition, the band gap of the proposed structure is studied. The proper layer number and pattern of metallic rods structure can control the operating frequency band. The structure can be future applied such as improving characteristic of antenna and electromagnetic interference.

7. 6549

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Modelling and Analysis of SA-SPV System with bi-directional inverter for lighting load

Abstract. The standalone solar photovoltaic system (SA-SPV) is an appealing alternative for carrying out the electrification process in rural regions through packages in lots of countries. The photovoltaic systems are always supplied with storage facilities that are backed with battery power for the usage of stored power in the course of the nighttime. Availability of bidirectional converter guarantees to improve the utility of those SA-SPV systems to generate, feed, and store power to nearby micro-grids. Additionally, the functioning of systems could be increased to optimized levels by reducing the power losses that are experienced at sub-system stages in the standalone solar photovoltaic system. The present research includes HOMER Pro for simulation of power performance (7 kWp) SA-SPV system mounted in poultry warehouse in Erbil, Iraq to estimate power losses cause for the stand-alone layout. The system is supplied with battery storage (18kWh) this is used for providing power for night hours poultry warehouse lights up to ≈ 7 hours/day. The outcomes of the simulation presented that once the SA-SPV is converted to a grid-connected system the system will deliver the light load up to ≈ 11 hours by combining a bi-directional converter. It also highlighted that the SPV system will produce an overall 9891 kWh/year on the site in which 4476 kWh is to be supplied to the nearby single-phase microgrid. It accounts for electricity loss if the system is kept to function as an SA-SPV layout.

8. 6552

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Design of mmWave Multi-sector array Using Bowtie Antenna Elements for 5G Mobile Base Stations

Abstract. This paper proposes a compact multi-sector array structure based on bowtie antenna elements. The designed array consists of three (1×8) linear arrays to cover 360°. The array is designed to operate at 28 GHz on an RT/Duroid 5880 substrate to meet the high-frequency specifications with a thickness of 1.575 mm and a dielectric constant of 2.2, while the dissipation factor is (0.0009). Each array sector has a dimension of 30.17 mm as width and 6.4 mm as length. A beam steering performance is proved with the capability of switchable beams to offer directional/omnidirectional choices. Simulations results showed that the proposed array exhibits excellent reflection coefficient characteristics along with a high gain of up to 13.5 dBi and high radiation efficiency. Two configurations of array sectors are presented to introduce a flexible control of the array beams.

9. 6553

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Experimental Analysis of ACP on Photovoltaics as Free Convection for Increasing Output Power

Abstract—This experiment uses perforated ACP as a cooling medium mounted on the back of a 100 Wp polycrystalline type photovoltaic panel, ACP with a hole diameter of 10 mm as passive cooling, which functions to reduce the temperature of the photovoltaic panel which has increased due to an increase in temperature. Radiation and excess heat from the Sun from 09.00 am to 15.00 pm, which is the peak of solar heat in subtropical areas such as Indonesia. The decrease in the temperature of the PV panels installed using the ACP cooler with a maximum of 9.13°C due to the free convection process will cause an increase in the maximum output power of the PV panel of 11.15 W.

10. 6556

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An Improved Chaotic System-based 1D Logistic Map Applied to Gray Scale Images Encryption

Abstract. In this paper, we propose an improved chaotic system inspired from the classical 1D Logistic map. The main idea consists in enhancing the performance of the control parameter by extending its chaotic range. The improved Logistic map (ILM) is applied to gray scale encryption images using the confusion-diffusion architecture. The input image is first chaotically scrambled before performing an element by element recursive XOR on its successive chosen blocks of (8×8) or (16×16) . Obtained result is reshaped to give the encrypted image. Computer simulations prove the performances of this method in terms of histogram analysis, correlation and sensitivity analysis.

11. 6557

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An Electronic Controllable Biquadratic Filter based on Single Mo-CCCCTA .

Abstract. This article introduces a new biquad filter which simultaneously provides five filter responses: high-pass (HP), band-pass (BP), low-pass (LP), band-reject (BR) and all-pass (AP) and the quality factor and pole frequency can be tuned. Additionally, input bias currents and filter functions were presented in this paper. One active building block used in this implementation was the multiple-input single-output (MISO) current controlled current conveyer transconductance amplifier (MO-CCCCTA) with grounded resistor and capacitors. The pole frequency and the quality factor can be electronically/independently tuned with the bias currents of the biquadratic filter which were MO-CCCCTA. The Pspice simulation results of the presented filter using BJT technology was implemented to confirm the performances and theoretical analysis.

12. 6560

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Power quality enhancement in wind turbine based DFIG using fuzzy control and neural-RIP for harmonic mitigation

Abstract. Harmonic issue in the wind power plant is a concerning problem for both consumers and producers as that it affects the power quality of the distribution systems. This paper presents an improved control strategy for harmonic current compensation in wind turbine-based DFIG connected to the grid, using RIP-ADALINE for harmonic currents detection. A vector control-based fuzzy logic controller is applied to improve the active and reactive power flow. The active filtering is achieved using the grid side converter of the DFIG. The studied system has been simulated using MATLAB/SIMULINK platform. The results obtained show the effectiveness of the control strategies applied to the system. Therefore the power quality in terms of grid current waveform, total harmonic distortion (THD) factor, frequency spectrum, and system power factor is improved within permissible standard values as defined by IEEE-519

13. 6563

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Optimal selection of static capacitors battery and compensation factor depending on the network resistance

Abstract. The problem of optimal selection of a capacitor bank, taking into account the annual curve of reactive power in the network, is solved. The expressions for the cyclic duration factor of a capacitor bank and its own losses are determined. A method of reducing power losses in the network is shown. Expressions for determining the optimal capacity of the capacitor bank in the network, with the active network resistance taken into account, are obtained. On their basis practical recommendations are formulated.

14. 6566

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Performances comparison of BLDC and BLAC motors based matrix converter

Abstract. The technology of controlling the speed of a brushless motor is very popular in many applications. It is preferred because of its high energy density, high efficiency and robustness. On the other hand, the matrix converter (MC) is an AC / AC power supply system which has many advantages which allow to maintain the quality of the energy supplied directly from the network more efficient and well filtered. This article proposes a study of the speed control of a BLDC motor supplied first through an inverter and then directly from the grid using a matrix converter.

15. 6567

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Thermal Imaging-Based Body Temperature and Respiratory Frequency Measurement System for Security Robot

Abstract. Measurement of body temperature and respiration rate is the most basic screening in knowing a person's health. For security reasons and to prevent the spread of transmission, in the Covid-19 pandemic conditions, measurements can be made by security robots. Measurement of body temperature and respiration rate was done non-contact based on thermal imaging. Temperature measurement is based on the temperature in the face area, while the respiration rate is based on changes in temperature in the nose area. The ability to measure temperature gives an accuracy of 98.21% with a standard deviation of 0.536. And the best respiration rate is the fast Fourier transform method which gives an accuracy of 79.8% with a standard deviation of 3.291.

16. 6568

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Optimization of Copper(I) Thiocyanate as Hole Transport Material for Solar Cell by Scaps-1D Numerical Analysis

Abstract. In SSDSSC, various key parameters of CuSCN as HTM were explored using SCAPS-1D simulation software. A layer thickness of 3 μm with a moderate value of interface defect density was obtained yielding 2.56% of PCE in SSDSSC. TiO_2 ETM and Ni back contact was found to be the best combination with CuSCN HTM in SSDSSC. An excellent temperature gradient in a range between -0.04%/K and -0.05%/K was demonstrated, showing that the temperature tolerances of the studied devices are encouraging. In addition, PCE as high as 31.31% has been achieved by substituting the N719 dye with a perovskite absorbent of $\text{CH}_3\text{NH}_3\text{SnI}_3$, and hence exceeding the previously reported PCE value in PSC. Other parameters that have been optimized are retained. Furthermore, the quantum efficiency of such structure has proved that cells with $\text{CH}_3\text{NH}_3\text{SnI}_3$ absorbent layer can absorb a wider range of the light spectrum, enhancing the power conversion efficiency.

17. 6571

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Characteristics of angular panorama of errors in the phase difference direction finding of two-point coherent emitter

Abstract. This work is devoted to obtaining and analyzing quantitative estimates of the influence of various parameters of the "emitter - direction finder" system on the levels of direction finding errors of a two-point coherent emitter. The obtained results of a quantitative assessment of the dependence of the angular panorama parameters of the direction finding errors of a two-point coherent emitter on the magnitude of the base of the emitter provide the basis for justifying the choice of the base value and other parameters when solving practical problems.

18. 6572

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Investigation of the influence of the quality of the power supply system on the characteristics of an asynchronous motor with a squirrel-cage rotor

Abstract. The paper presents the results of studies of the influence of the quality of power systems on the characteristics of an asynchronous electric motor with a squirrel-cage rotor. During the research, a mathematical model of an induction motor, made in the MATLAB software environment, was used. Based on the simulation results, the coefficients of the torque ripple and the phase current unbalance were determined. The results obtained are compared with previous studies of the manifestation of turn-to-turn closures in the phases of the motor stator winding, which also create an asymmetry of the rotating magnetic field.

19. 6573

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Nonlinear controllers design for plug-in hybrid electric vehicle

Abstract. Alternative options for producing electricity and fulfilling the increasing electric vehicles power demand can help in minimizing the global warming impact. It is important to maintain the load-balance generation based on load demands. This research investigates plug-in hybrid electric vehicles (PHEVs) through designing the charging and the working controllers and studying them. The DC bus voltage regulation and tracking of the battery and supercapacitor currents to their desired values were designed using non-linear sliding mode controllers. The validation of the SMC controller's efficient performance was carried out using a non-linear based backstepping controller and compared with the non-linear sliding mode controllers. Further, this research presents a comparative analysis, that is, a detailed response of the non-linear based backstepping controller and the SMC controller regarding their ability to track, the DC bus voltage regulation and desired reference, the battery, and supercapacitor currents. Also, a Lyapunov function candidate was used to analyze the PHEV's global asymptotic stability. After verification of the designed controllers using MATLAB/Simulink, the results indicate that both controllers achieved the aim of the DC bus voltage regulation and its reference voltage tracking under different load conditions.

20. 6575

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Study and Analysis of a Novel Compact Cubic Antenna Design for WSN Applications

Abstract. This paper presents a novel miniaturized 3-D cubic antenna to be used for wireless sensor network (WSN) applications. The geometry of this antenna is designed as a cube including a meander dipole antenna. A truly omnidirectional pattern is produced by this antenna in both E-plane and H-plane, which allows for non-intermittent communication that is orientation independent. The operating frequency lies in the ISM band (centred in 2.45 GHz). The cubic shape of the antenna allows for smart packaging, as sensor equipment may be easily integrated into the hollow cube interior. All results of the simulations were performed by CST Microwave Studio simulation software and validated with HFSS.

21. 6577

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Real-Time Optimal Power Flow of South Sulawesi Network System That Integrated Wind Power Plant Based on Artificial Intelligence

Abstract. The development and utilization of technology are always directly proportional to the need for electrical energy. Real-time power flow research is used to evaluate the effect of wind power generation fluctuations on existing conventional systems. This research was conducted on the South Sulawesi electricity network system using Modified Improved Particle Swarm Optimization (MIPSO). The real-time results show that the power loss in the conventional system that is interconnected with wind power plants is 63.9208 WM, less than the power loss in the conventional system, which is 85.9440 WM. Likewise, the cost of the generating system connected to a wind power plant is \$23368.6622/hour, lower than the conventional system power of \$23503.444/hour, reducing costs or efficiency by 0.5735%/hour. Real-time analysis of optimal power flow with MIPSO can be used to determine the effect of changes in power generated by wind power plants on the conventional power grid system of Southwest Sulawesi.

22. 6578

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Analysis of Series Resonance in Power Distribution Networks with Aggregate Harmonic Sources

Abstract. A hybrid technique for the analysis of series resonance in power network with aggregate harmonic sources is hereby presented. It involves the identification of resonant modes using admittance scan and computation of network currents at the generated harmonic frequencies with cable capacitance included by the creation of dummy loops. The computed cable currents when compared with the corresponding current capacity indicate the amplification of current during resonance.

23. 6587

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A mathematical model of an ultrahigh voltage transmission line taking into account overhead ground wires

Abstract. The development of a mathematical model of a three-phase ultrahigh voltage transmission line with two overhead ground wires is presented in the paper. The mathematical model is based on differential equations of state of a long line with partial derivatives in the matrix-vector form. The boundary conditions of the second kind (Neumann's conditions) are used, which enables obtaining functions of unknown coordinates of the overhead ground wires mode at the beginning and at the end of the voltage transmission line to solve the transmission line equation. Some results of computer simulations of transients during switching on and a single-phase short circuit of the line are presented in the form of corresponding graphic functions of its mode coordinates.

24. 6588

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Methods for the implementation of automatic reclosing on combined overhead and underground cable power lines 110-500 kV

Abstract. The article discusses the existing and prospective methods of automatic reclosing of cable-overhead power lines. An overview description is given. The analysis of the features of the considered methods is carried out, the advantages and disadvantages are reflected, the structural diagrams are presented, the areas of application are determined. Highlighted the prospects of methods of automatic reclosing on combined overhead and underground cable power lines on the basis of wave principles.

25. 6600

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Armature Control of a DC Motor Based on Programmable Logic Controller

Abstract. A design and implementation of separately excited DC motor speed measurement using programmable logic controller (PLC) techniques is established alternatively of using imitative mechanical ways. The techniques available in PLC type (SIEMENS, LOGO! 230RC) are enough to achieve this connection and measure the speed with a simple way. Separately excited DC motor speeds were taken according to speed meter (Autonics, MP5W). In this paper, the PLC armature resistive controlled and the traditional armature resistive control have been investigated for controlling the speed of DC separately excited motor. By comparison the obtained results for both methods, it appeared that the results are approximately similar but the suggested system is much simpler than the imitative system.

26. 6607

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Higher harmonics filtration in the power supply system of thyristor hoisting machine of shaft transport in a mining plant

Abstract. The paper presents the issues of the influence on the supply electrical power grid of the thyristor rectifier supplying high power receivers such as shaft hoisting machines in mining. The current distortion influence of the non-linear load on the quality of electricity in the plant's power grid was presented. Methods of higher harmonics filtration of the current supplying the hoisting machine are discussed. The results of control tests of the effectiveness of shunt passive higher harmonic filters after changing the configuration of the power grid of the mine are presented.

27. 6608

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A Soft Switched Single Ended Primary Inductor Converter Power Factor Correction Circuit for Low Power Applications

Abstract. The current study aims at investigating a Single Ended Primary Inductor Converter Power Factor Correction (SEPIC PFC) circuit of low power applications such as the adapters of laptops and mobiles. The SEPIC PFC is designed in Critical Conduction Mode (CRM) to drive 30W load. A closed loop control circuit is designed to maintain 15V-DC constant output voltage with Constant On Time (COT). The designed circuit is validated by LTSPICE software with a switching frequency up to 260kHz. A Zero Current Switching (ZCS) for the power switch is achieved, thus reducing the switching losses. The design considerations of SEPIC PFC are discussed. The simulation results show that the proposed design has nearly a unity power factor and a satisfying efficiency result over the line voltage range.

28. 6609

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Genetic PID and Feedforward Controllers for DC-DC Chopper Converter

Abstract. DC voltage choppers such as buck, boost, and buck/boost are widely used in electrical power applications. Since these choppers are connected directly between DC source such as solar photovoltaic PV systems or batteries, a disturbance or dc source fluctuations may occur at the input of chopper circuits. Therefore, the control systems must be designed and developed in order to reduce such an increase or decrease in voltage. In this paper, two control strategies have been studied and analyzed to reduce system disturbance and minimize the error resulted from noise. The first strategy uses both feedback and feedforward controllers, in this strategy the controllers are designed based on linearization system. The second strategy uses genetic algorithm to tune the integrated proportional, integral, and differentiator PID feedback controller parameters directly for the nonlinear system. The results show that, the genetic PID controller has better performance than the Feedforward/Feedback controller. The mathematical model of the chopper-controlled system using both strategies and the simulation results are extracted using Matlab/Simulink 2018.

29. 6612

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Using deep learning to recognize the sign alphabet

Abstract. This article describes a vision system that uses deep learning to recognize 24 static signs of the American Sign Alphabet in real time. As part of the project, images of signs from four publicly available databases were used as a training set. A DenseNet was implemented for image recognition. For testing, images were acquired with the use of a web camera. The accuracy of sign recognition in images is more than 80%. The real-time version of the system was implemented.

Streszczenie. Artykuł zawiera opis systemu wizyjnego wykorzystującego uczenie głębokie do rozpoznawania, w czasie rzeczywistym 24 statycznych znaków Amerykańskiego Alfabetu Migowego. W ramach realizacji projektu, w charakterze zbioru uczącego, wykorzystano obrazy znaków pochodzące z czterech ogólnodostępnych baz danych. Zastosowano sieć DenseNet do rozpoznawania obrazów. Do testów stworzono własne obrazy z wykorzystaniem kamery internetowej. Skuteczność rozpoznawania znaków migowych z wykorzystaniem obrazów przekroczyła 80%. Zaimplementowano wersję systemu pracującą w czasie rzeczywistym- (Wykorzystanie uczenia głębokiego do rozpoznawania alfabetu migowego).

30. 6620

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Symulacja termiczna sterownika bramkowego tranzystora MOSFET mocy pracującego z częstotliwością 30 MHz

Streszczenie. W artykule przedstawiono opis i sposób realizacji symulacji termicznej niskostratnego sterownika bramkowego małej mocy mogącego pracować z częstotliwością sięgającą 30 MHz. Symulacja komputerowa rozkładu temperatur na płytce PCB obwodu drajwera została przeprowadzona w celu określenia maksymalnej, dopuszczalnej temperatury pracy układu. Wyniki przeprowadzonej symulacji termicznej dla stanu ustalonego zostały zweryfikowane na stanowisku badawczym przy użyciu kamery termowizyjnej. W wyniku symulacji termicznej wykonanej w oprogramowaniu ANSYS otrzymano rozkład temperatury na płytce PCB wykonanej z materiału IMS (o podłożu aluminiowym), określono temperatury maksymalne dla układów małej mocy. W wyniku badań laboratoryjnych określono straty mocy w niskostratnym sterowniku bramkowym pracującym dla maksymalnej częstotliwości 30 MHz oraz zweryfikowano otrzymane wyniki symulacyjne.

Abstract. This paper presents a FEM simulation of low-losses MOSFET driver. This gate driver can run at 30MHz frequency and was made with eight low power MOSFET drivers UCC27256. The steady state thermal simulation was made in ANSYS software used a 3D driver model (figure 6,7) performed in Inventor Professional software. The 3D model of MOSFET driver reflects the properties of the real circuit (figure 5) including: PCB board was made IMS material, low power MOSFET drivers UCC27256 and all other items of driver. The steady state thermal simulation of low-losses driver 8xUCC27256 was carried out in order to determine the maximum permissible operating temperature of the circuit. Additionally, in this paper presents a temperature distribution of PCB board of MOSFET driver (figure 11), maximum temperature of PCB board (figure 12,13) and characteristic of power losses for MOSFET driver for frequency range from 10 MHz to 30 MHz (figure 10). The results of FEM thermal simulation were compared to real infrared photo (figure 17) which was made for a maximum operating frequency 30MHz. (**The steady state thermal simulation of gate MOSFET driver operating at 30 MHz**)

31. 6623

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Rotaring polarization microstrip antenna for DSRC system

Streszczenie. W pracy przedstawiono zaprojektowaną i wykonaną antenę o polaryzacji wirującej z przeznaczeniem do systemu DSRC. Antena wykonana w technologii drukowanej. Zaprezentowano i omówiono otrzymane charakterystyki promieniowania anteny systemie 3D oraz jej dopasowanie. **Antena mikropaskowa o polaryzacji wirujące przeznaczona do systemu DSRC**

32. 6624

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„SMART CLOTHING” WEARABLE FOR VITAL SIGNS MONITORING

Streszczenie. Autorzy niniejszego artykułu skupili się na monitorowaniu temperatury ciała, tętna oraz poziomu napięcia mięśniowego. Do wytworzenia urządzenia monitorującego wyżej wymienione parametry życiowe wykorzystano mikrokontroler ESP8266, pulsometr SparkFUN MAX30105, czujnik napięcia mięśniowego MyoWearMuscle sensor, czujnik temperatury DS18B20. Autorzy wykonali również testy wytworzonego przez siebie rozwiązania. Testy zbudowanego systemu wykazały poprawność działania systemu. Należy mieć na uwadze, że przedstawiony w niniejszym artykule system do monitorowania parametrów życiowych jest jedynie wersją prototypową, ukazującą możliwości i potencjał projektu.

33. 6637

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Application of the discrete linear chirp transform (DLCT) to estimate the parameters of multicomponent LFM signals

Abstract. This paper is focused on method to estimate the parameters of multicomponent linear frequency modulation (LFM) signals. These non-stationary signals, which are often referred to as "chirp", are encountered in many fields such as communication, vibration analysis, radar systems. The presented method, which is based on the discrete linear chirp transform (DLCT), permits the chirp parameters to be precisely estimated. Its high performance, which was proven by the simulation results, coupled with its simplicity, makes this method useful for many applications.

Streszczenie. W artykule przedstawiono metodę estymacji parametrów wieloskładnikowych sygnałów z liniową modulacją częstotliwości. Z tego typu sygnałami mamy do czynienia w takich dziedzinach jak telekomunikacja, analiza drgań, systemy radarowe. Przedstawiona metoda, bazująca na DLCT (ang. Discrete linear chirp transform), pozwala na oszacowanie parametrów wspomnianych sygnałów. Jej wysoka skuteczność, potwierdzona wynikami symulacji, w połączeniu z prostotą, czyni metodę użyteczną w wielu zastosowaniach. (Zastosowanie transformacji DLCT do estymacji wartości parametrów wieloskładnikowych sygnałów LFM).

34. 6639

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Trajektoria kwintowa – dwuwymiarowa reprezentacja muzyki*

Streszczenie. W artykule przedstawiono metodę reprezentacji utworów muzycznych w postaci trajektorii kwintowej. Istota tworzenia trajektorii kwintowej polega na obserwacji zestawu pojawiających się dźwięków z ustaloną rozdzielczością czasową. Liczności, bądź czas trwania poszczególnych dźwięków odzwierciedlony jest poprzez długości wektorów wpisanych w koło kwintowe, tzw. sygnatury muzyczne. Trajektoria kwintowa obrazująca zmienność w czasie sygnatury muzycznej pozwala o jakościową ocenę struktury harmonicznego utworu muzycznego. Postać trajektorii kwintowej zależy z charakterem utworu i może stanowić obiekt badań związanych z pozyskiwaniem wiedzy muzycznej, ściśle powiązany z problemami klasyfikacji gatunków muzycznych. W artykule przedstawiono koncepcję tworzenia trajektorii kwintowej i rysunki pokazujące przykłady trajektorii kwintowych dla różnych znanych utworów muzycznych.

Abstract. This paper presents a method for representing the musical works in the form of the trajectory of fifths. The essence of creating a trajectory of fifths consists in observing with a fixed time resolution a set of appearing sounds. The multiplicity, or duration of individual sounds is reflected by the lengths of vectors inscribed in the circle of fifths, so-called music signatures. The trajectory of fifths allows for a qualitative evaluation of the harmonic structure of a musical piece. The form of the trajectory of fifths is closely related to the character of the piece of music and can be an object of research related to the acquisition of music information retrieval, closely related to the problems of music genres recognition. This paper presents the concept of creating a trajectory of fifths and figures showing examples of trajectory of fifths for various well-known pieces of music. (Trajectory of fifths - a two-dimensional representation of music)