

Contents

01	Ravi Raj, Andrzej Kos - Artificial Intelligence: Evolution, Developments, Applications, and Future Scope	1
02	Leszek S. CZARNECKI, Motab ALMOUSA - Adaptive Compensation of Reactive, Unbalanced and DC Currents of AC Arc Furnaces	14
03	Ahmed Gamal Abdellatif Ibrahim, Mohamed Saleh², Adham Ahmed Elmahallawy - De-Noising of Secured Stego-Images using AES for Various Noise Types	21
04	Raksha Ramakotti, Surekha Paneerselvam, Vinoth Kumar K, Sachin Kumar, Jebarani Evangeline S - An Analysis of Denoising Neural Networks for Noise Removal in Images	27
05	Talha Burak AKCA, Cenk ULU¹, Salih OBUT - ANFIS Based Inverse Controller Design for Liquid Level Control of a Spherical Tank	32
06	Mário Sérgio Freitas Ferreira CAVALCANTE, Livia de Maria Calado Machado SOARES, Ícaro Bezerra Queiroz de ARAÚJO, Fábio Meneghetti Ugolino de ARAÚJO - Comparative Study of Optimizations for Control Problem Using Fuzzy Type-2	37
07	Przemysław WISZNIEWSKI, Marcin KOŁODZIEJ, Andrzej MAJKOWSKI, Andrzej RYSZ - Detection of epileptic seizures with the use of convolutional neural networks	51
08	Jacek KORYTKOWSKI, Kazimierz MIKOŁAJUK, Krzysztof SIWEK, Andrzej TOBOŁA - Moving average signals for the static compensator control	56
09	Piotr GRYGIEL, Jan TARŁOWSKI, Krzysztof MIK - Commercial lightweight photovoltaic modules for applications in on-grid systems	63
10	Jacek KLUCZNIK - A new approach to cross-bonding in medium voltage cable lines	67
11	Viktor ZANOZIN, Andrzej ZANKIEWICZ - Visual monitoring of social distancing behavior using artificial intelligence algorithms	73
12	Dmytro MAMCHUR, Antons KOLODINSKIS, Bohdan PEREVYRTALO – State of the Art on Development of a Prototype of Autonomous Moving Vehicle Model Controlled by Microcomputer	78
13	MANSUR, Salama MANJANG, Ardiaty ARIEF, Yusri Syam AKI - Optimal hybrid renewable energy generation planning based on BSG-starcraft radius particle swarm optimization	82
14	Salam B ABOOD, Thamir M Abdul WAHHAB - Voltage Upgrading of Power Distribution Network in Basra City from 11 kV to 33 kV	88
15	Yutti CHATWARANON, Satean TUNYASRIRUT, Punnavich PHATSORNSIRI - Analysis of The Power Dissipation of The Wireless Sensor with Heuristic and Metaheuristic Methods for Solving	96
16	AOUFI Ahmed, BOUREK Amor, GHADBANE Ismail - Real Time Implementation of Fuzzy Logic Based Direct Torque Control of Three Phase Induction Motor	100
17	Ekkawit THAOKEAW, Krittanon PRATHEPHA, Jagraphon OBMA, Worawat SA-NGIAMVIBOOL - Design of Parallel 2-DOF PID Controller by Bee Algorithm for Interconnected Thermal Power Systems	104
18	Josue Ramos O., Hector Flores V., Jeampaul Villena R., José Gonzales Z., Joseph G. M. - Development of a Detection System for People Drowning Through Aerial Images and Convolutional Neural Networks	109
19	Rosmaliati³, Novie Elok, Ratna Ika Putri, Ardyono Priyadi, Taufik, Mauridhi Hery P. - The Remaining Life of Distribution Transformer Prediction by Using Neuro-Wavelet Method	114
20	Iskandar Dzulkarnain RUMMAJA, Muhammad Idzdihar IDRIS, Aina Maisarah ZAMBERI, Nurbahirah NORDDIN, Muhammad Noorazlan Shah ZAINUDIN, Jeefferie ABD RAZAK, Khairul Radi Husin Bin Ramlee, Fadzli SAMAT - Analysis of the electrodeposited ZnO as photo anode for solar cells	123
21	Ali HAMOODI, Rasha MOHAMMED, Bashar SALIH - Extra High Voltage Transmission Line Lightning Protection using Surge Arrester	127
22	Fajer FADHIL, Mohammed ABDULGHANI, Anmar SALIH, Mohammed GHAZAL⁴ - Traffic Surveillance: Vehicle Detection and Pose Estimation Based on Deep Learning	131
23	Abdelhak ZOUGGARET, Hocine Abdelhak AZZEDDINE, Djamel-Eddine CHAOUCH, Mohammed BERKA, Mourad HEBALI, Melouka BELLIL, Youcef Islam DJILANI KOBIBI¹ - An Efficient Fuel Cell Maximum Power Point Tracker based on an Adaptive Neural Fuzzy Inference System	135
24	Ibraheem J. Billy, Jasim F.Hussein - High Gain DC-DC Dual Converter integrating with Coupled Inductor and Diode Capacitor Switches	140
25	Kirthiga MURTHY, Nazreen WAELEH, Muhammad Aliff Ikhwan Che AZMAN, Antony SUMARDI, Siti Amaniah Mohd CHACHULI, N. H. SHAMSUDIN, Nooraini ZAINUDDIN - Automatic press dough machine using blynk IoT	147
26	Setsiri KLANGMUANG, Jagraphon OBMA, Krittanon PRATHEPHA, Narongkorn UTHATHIP, Nuttapon CHAIDUANGSRI, Worawat SA-NGIAMVIBOOL - The LC Oscillator Circuit Using Caprio Techniques	152
27	Agnieszka CHOROSZUCHO - Estimation of the influence of the plane wave angle on the values of the electric field intensity in structures with a wall made of solid bricks and hollow bricks	156
28	Grzegorz KŁOSOWSKI, Przemysław ADAMKIEWICZ, Konrad NIDERLA - Combining electrical capacitance and impedance tomography in monitoring processes	161
29	Krzysztof KRÓL, Konrad NIDERLA, Edward KOZŁOWSKI - Multisensor platform using industrial tomography for monitoring and control of technological processes	165
30	Konrad KANIA, Mariusz MAZUREK, Jan SIKORA - Regularization of the Solution for Noisy Data Using the FOCUSS Method in Transmission Ultrasound Tomography	169
31	Jan SIKORA - Scattering problems in 2D space within the Rayleigh regi	173
32	Łukasz MACIURA, Dariusz WÓJCIK, Michał MAJ, Dariusz MAJEREK, Bartłomiej Kiczek - A stereo vision system on Jetson device using deep learning	178
33	Paweł DRZYMAŁA, Henryk WELFLE - JSON standard support mechanisms for efficient data storage and processing in IBM DB2 environment	182
34	Robert KAZNOWSKI, Dariusz SZTAFROWSKI - Electricity system based on renewable energy sources. Opportunities and barriers to development	186
35	Paweł KIEŁBASA, Pavoł FINDURA, Mirosław ZAGÓRDA - Identification of variation in mental strain of an agricultural tractor operator in the field during precise fertilizer spreading	190

Contents

36	Paweł KIELBASA, Anna MIERNIK, Michał RAD - Computer program for quantitative identification of microscope images of cells in biological suspension of selected strains of microorganisms	194
37	Anna KOZIOROWSKA, Wiktor CZAJKA, Bartosz PIECHOWICZ, Robert KRASOWSKI, Marek KOZIOROWSKI - The electromagnetic field and thyroid reactivity to thyroid stimulating hormone (TSH)	198
38	Anna KOZIOROWSKA, Jakub SIUTA, Ewelina BATOR, Robert KRASOWSKI, Marek KOZIOROWSKI - Electromagnetic field as a factor affecting the activity of the synthesis of the enzyme 3 beta-hydroxysteroid dehydrogenase (3 β -HSD) in the cells of the adrenal cortex of lambs	202
39	Marek KUCHTA - Modeling and electronic measurements of selected human biosystems	206
40	Robert ŻELAZNY, Ewa ŁADA-TONDYRA, Paweł JABŁOŃSKI, Waldemar MINKINA - Heat Distribution In A Railroad Turnout Heated By An Induction Heater	210
41	Paweł A. MAZUREK, Oleksandr M. NAUMCHUK, Aleksander CHUDY - Electromagnetic emission from domestic electric equipment of 20th and 21st centuries in the aspect of electromagnetic compatibility	214
42	Arkadiusz MIASKOWSKI, Piotr GAS - Modelling of Temperature Distribution in Anatomically Correct Female Breast Cancer	218
43	Joanna MICHAŁOWSKA, Paweł TOMIŁO, Jarosław PYTKA, Łukasz PUZIO, Arkadiusz TOFIL - Identification of electric field strength in aircrafts	222
44	Anna MIERNIK - The use of photon emission for identification of disease lesions in fir needles	226
45	Maryna MIKHALIEVA, Lubomyra ODOSII, Krzysztof PRZYSTUPA, Yuri SHABATURA, Mykhailo HRUBEL, Nataliya HOTS - Improvement of electrical methods of control and evaluation of impact of military activity on surface waters	230
46	Mariusz Najgebauer, Damian Gziel - The analysis of magnetic core properties under non-sinusoidal excitation waveforms	234
47	Marcjan NOWAK, Andrzej POPENDA - Influence of neural network configuration on PMSM motor angular velocity estimation	238
48	Paweł KIELBASA, Mirosław ZAGÓRDA - Ergonomic evaluation of mechanical vibrations of specialized agricultural machinery with general effects on humans	242
49	Mirosław ZAGÓRDA, Paweł KIELBASA - The use of telematics systems to optimize the operation of agricultural machinery	246
50	Andrzej POPENDA, Marcjan NOWAK - Modelling of an optimized BLDC motor energized by a sinusoidal voltage source	250
51	Paweł PTAK, Tomasz PRAUZNER, Henryk NOGA, Piotr MIGO, Agnieszka GAJEWSKA, Jakub GAJDA - Thickness measurements of coatings made of insulation materials	255
52	Michał PYRC, Michał GRUCA, Borys BOROWIK - The use of an inverter in the braking system of an internal combustion engine	259
53	Roman SIKORA, Przemysław MARKIEWICZ, Mariusz MAĆZKA, Stanisław PAWŁOWSKI, Jolanta PLEWAKO - Using interpolation method to estimation step and touch voltage in grounding system	263
54	Ewelina ŚWIĘS, Adam KOMARNICKI, Dariusz SZTAFROWSKI - Analysis of the generated magnetic field distribution in electric and hybrid cars	267
55	Karolina TRZYNIĘC - Characteristics of the low photon emission from the ingredients of chocolate and finished products	271
56	Tomasz NOWAK¹ - Power grids used in offshore facilities	275
57	Agnieszka DZIENDZIEL, Henryk KOCOT - Prospects for the development of high-power power transmission systems	278
58	Waldemar DOŁĘGA - National MV power substations – review of solution and technologies	282
59	Adam MROZIŃSKI, Patrycja WALICHNOWSKA - Analysis of the possibilities of energy cooperatives functioning in Polish environmental and legal conditions	286
60	Kornel BOROWSKI, Stanisław CZAPP - Measurement of earth fault loop impedance in circuits with time-delay type residual current devices	289
61	Leszek LITZBARSKI, Marek OLESZ, Konrad SEKLECKI, Mikołaj NOWAK - Selected threats related to the operation of photovoltaic installations	293
62	Andrzej AUGUSIAK, Stanisław Pomykacz, Jakub Redmerski - PLC Controller as a Modbus-IEC 61850 Communication Translator	296
63	Piotr SĘPKA, Maciej BRZYCKI, Artur CICHOWSKI - Transformer with thyristor tap changer as a control object	299
64	FEBY AGUNG PAMUJI, ILHAM SETYO WASKITO, HERI SURYOATMOJO, Bambang SUDARMANTA, Mohammad Khoirul Effendi, Nurvita ARUMSARI - Design and Implementation of 3 Phase Inverter for Brushless DC Motor Using Six-Step Commutation Method with Ripple Suppression	303
65	Ali N. Hamoodi, Waseem Kh. Ibrahim, Aseel Thamer Ebrahim - Design PV Power System: A Case Between Two Different Types of Solar Modules	310