

2021 IEEE 27th International Symposium for Design and Technology in Electronic Packaging (SIITME 2021)

**Timisoara, Romania
27 – 30 October 2021**



**IEEE Catalog Number: CFP2107I-POD
ISBN: 978-1-6654-9447-2**

**Copyright © 2021 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:	CFP2107I-POD
ISBN (Print-On-Demand):	978-1-6654-9447-2
ISBN (Online):	978-1-6654-2110-2
ISSN:	2641-287X

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

CURRAN ASSOCIATES INC.
proceedings
.com

Contents

Nr. Crt	Title and Authors	Page
1	The Development Process of a Quick SMS Auto Responder App for Car Drivers of Busy People <i>Szabo, R., Gontean, A., Burta, A.</i>	1
2	The Development of a Head-Up Display (HUD) App on the Android Mobile Operating System <i>Szabo, R., Gontean, A., Burta, A.</i>	5
3	Piezoelectric Energy Harvesting using SSHI Technique <i>Covaci, C., Gontean, A.</i>	9
4	In-circuit ESR Measurement Method for Electrolytic Capacitors <i>Marinca, M., Ilies, E., Barbulescu, C., Gontean, A.</i>	13
5	IoT Technology Used in Vineyard Monitoring <i>Hnatiuc, M., Ranca, A., Artem, V., Hnatiuc, B., Sintea, S., Ghita, S.</i>	17
6	The Methods for Vine Disease Identification <i>Hnatiuc, M., Ranca, A., Artem, V., Hnatiuc, B., Sintea, S., Ghita, S., Savin, B_C.</i>	21
7	Analysis and implementation of a band tracking system <i>Baciu, I. H., Viman, L.</i>	25
8	EMC Simulation of a Power Filter in the Automotive Area <i>Silaghi, A. M., Bleoju, C., De Sabata, A.</i>	29
9	Solving Automotive Signal Integrity Issues by EMC Simulation <i>Silaghi, A. M., Bleoju, C., De Sabata, A., Pescari, C.</i>	33
10	Testing of the Noise Measurement System for GMR Sensors <i>Davidas, A. C., Pop, O., Grama, A., Stetco, E. M., Petrisor, T. Jr.</i>	37
11	Increasing Thermal Simulation Efficiency with 6SigmaET <i>Fodor, A., Taut, A., Chindris, G.</i>	41
12	Education 4.0: Innovation Learning Lab for AI-Analysis and Concept Proposal <i>Ciolacu, M. I., Haderer, B., Berl, A., Svasta, P.</i>	45
13	IoT-based Smart Water Management Systems <i>Dragulinescu, A.-M., Balaceanu, C., Osiac, F. E., Roscaneanu, R., Chedea, V. S., Suciu, G. Jr., Paun, M. C., Bucuci, S.</i>	51
14	3D Helmholtz Coil System Design for Measuring the Thermal Conductivity of Magnetic Nanofluids <i>Alsangur, R., Doganay, S., Turgut, A., Cetin, L.</i>	57

15	On the use of Virtual Negative Resistance in Physical Selective Electronic Circuits <i>Nistor, N., Belea, R., Aiordachioae, D.</i>	62
16	Analysis of Systems for Supporting Precision Agriculture with Renewable Energy <i>Kadirova, S. Y., Kolev, Z. D., Cucu, M.</i>	66
17	Real-time Spatialized Sound Generator on Embedded Wearable Platform <i>Daraban, M., Lengyel, K., Faluvegi, A., Amariei, C.</i>	71
18	Wearable 2.4GHz Antenna on Textile Substrate <i>Calin, M., Svasta, P.</i>	77
19	Thermal Model of a Submersible Water Pump <i>Evstatiev, B. I., Evstatieva, N. L.</i>	81
20	Protocol over UART for Real-Time Applications <i>Daraban, M., Corches, C., Taut, A., Chindris, G.</i>	85
21	The influence of the SARS-CoV-2 on electricity consumption in Romania <i>Vasluiianu, M., Dobrea, M-A., Neculoiu, G., Moldoveanu, A-M. C.</i>	89
22	Effective Modeling of Interconnects with Domain Partitioning and Model Order Reduction <i>Ciuprina, G., Ioan, D.</i>	93
23	Activation of the polyvalent functionality for the optical filters using metamaterials <i>Apreoatesei, G., Ionescu, D.</i>	97
24	Evaluation of Finite Element Modelling Techniques of Printed Circuit Boards under Dynamic and Static Loading and Validation with Experimental Data <i>Silaghi, A. M., Tinca, I-E., Ailinei, I-I., Davidescu, A., Bleoju, C., Marsavina, L.</i>	101
25	Effect of Ge doping on electrochemical migration of SAC alloys in 0.5 M NaCl solution <i>Gharaibeh, A., Medgyes, B.</i>	105
26	Electronic Module for Control of Energy Source <i>Stoev, I. I., Zaharieva, S., Borodzhieva, A.</i>	109
27	Realization and Testing of Electrodes for Supercapacitors based on MOFs and Activated Carbon	113
28	Electrical Parameters Prediction for Fab-to-Fab IC Product Migration <i>Rusu, A-V., Kovacs, I., Carbunescu, B-R., Topa, M-D., Buzo, A., Pelz, G.</i>	117
29	Effects of Pollution on Radio Transmissions <i>Burciu, L-M., Fotescu, R-P., Constantinescu, R., Svasta, P.</i>	121
30	LC Oscillator Design Used in Sensor Measurement Based on Embedded	125

	Technology	
	<i>Bande, V., Pop, S. S.</i>	
31	Advantages of Using Battery Cell Balancing Technology in Energy Storage Media in Electric Vehicles <i>Fotescu, R-P., Burciu, L-M., Constantinescu, R., Svasta, P.</i>	129
32	Student-centred Learning Environments in the Discipline “Radio Communication Technologies” <i>Tsvetkova, I., Borodzhieva, A.</i>	133
33	Active and Interactive Methods Used in Teaching and Learning the Topic “Cryptosystems Based on Nonlinear Feedback Shift Registers” <i>Borodzhieva, A., Tsvetkova, I., Zaharieva, S., Mutkov, V., Dimitrov, D.</i>	137
34	Application of Software for the Purpose of Enhancing Online Education <i>Tsvetkova, I., Borodzhieva, A.</i>	143
35	Automation of Information Exchange Between Neural Networks <i>Kaloev, M., Krastev, G.</i>	147
36	Inquiry-Based Learning Used for Implementation of BCD Adders in the Course “Digital Electronics” <i>Borodzhieva, A., Tsvetkova, I., Zaharieva, S., Mutkov, V., Dimitrov, D.</i>	150
37	Climatic Aging of Conductive Adhesive Joints on Pads with Different Surface Finishes <i>Mach, P., Lacina, R.</i>	156
38	Mathematical Modeling of Resistance of Conductive Adhesive Joints in Climatic Aging <i>Mach, P., Lacina, R.</i>	160
39	Experimental Estimation of the State of Health of Lithium-ion Batteries under Different Conditions <i>Ilies, A. I., Chindris, G., Pitica, D., Jano, R.</i>	165
40	POL DC-DC Converter Output Capacitor Bank’s Reliability Comparison using Prediction Standard MIL-HDBK-217F and SN 29500 <i>Butnicu, D.</i>	169
41	About narrow band optical digital filters based on metamaterials <i>Ionescu, D., Apreutesei, G.</i>	173
42	Proposal of Energy Independent Greenhouse <i>Ilies, E., Marinca, M., Bularka, S., Vajda, M., Albulescu, D., Seiculescu, C.</i>	177
43	Effect of Water on the Photovoltaic Performance of TiO ₂ Based Dye-Sensitized Solar Cells Using I-/I ₃ - Redox Couple <i>Vajda, M., Albulescu, D., Ursu, D., Ilies, E., Marinca, M., Gontean, A., Miclau, N., Miclau, M., Duteanu, N.</i>	181

44	Investigation on Meandered Split Ring Resonator for Metamaterial Microwave Absorber Design <i>Mocanu, I. A.</i>	185
45	Measurement application for UV-C irradiation intensity evaluation <i>Ionel, R., Serban-Pop, N., Matiu-Iovan, L., Ordodi, V.</i>	189
46	Retrofitting Video Surveillance Systems using Deep Learning Technologies <i>Andreescu, M. T., Mirsu, R., Caleanu, C. D.</i>	193
47	VLSI Design of a 5th-order Gm-C Low-Pass Active Filter in CMOS Technology <i>Zara, A., Bozomitu, G.</i>	197
48	Improved Affine Projection Algorithm for the Identification of Multilinear Forms <i>Dogariu, L-M., Paleologu, C., Benesty, J., Ciochina, S.</i>	201
49	Extending Insight About Solder Beading Effect Under Surface-mounted Electrolytic Capacitors <i>Straubinger, D., Toth, A.</i>	205
50	Computer Tomography Blurred Images Recovery <i>Petrova , T., Petrov, Z., Petkova-Georgieva, S.</i>	210
51	Spectrometric Milk Analyzer <i>Potarniche, I-A., Galatus, R-V.</i>	214
52	CBIR for urban building using A-KAZE features <i>Orhei, C., Radu, L., Mocofan, M., Vert, S., Vasiu, R.</i>	218
53	Research on the Extension of the Life Cycle of High Power Electricity Storage Devices <i>Bacuis, I. B., Perisoara, L., Vasile, A.</i>	222
54	Vibration Testing of a Solderless Electronic Module Manufactured by Additive Technique <i>Varzaru, G., Ungurelu, R., Branzei, M., Mihailescu, B., Ionescu, C., Svasta, P.</i>	226
55	Sensor-based IoT monitoring of Electronics Manufacturing in University Lab Environment <i>Geczy, A., Gelbmann, R., Harsanyi, G., Kuglics, L., Megyeri, I.</i>	230
56	Cascaded Adaptive Filters in a Multilinear Approach for System Identification <i>Rusu, A-G., Ciochina, S., Paleologu, C.</i>	234
57	The Impact of the Sub-circuits Parameters on the Efficiency of a Charge Pump <i>Brezeanu, I-B., Botezatu, C., Vasile, A., Brezeanu, G.</i>	238
58	Efficient Unaligned Memory Access of Tightly Packed Weights for Deep	242

	Neural Network Inference on Edge Devices	
	<i>Seiculescu, C.</i>	
59	Real-time line matching based speed bump detection algorithm	246
	<i>Sirbu, C. L., Tomoiu, C., Fancsali-Boldizsar, S., Orhei, C.</i>	
60	A Review of Failure Rate Calculation's Differences Due to Package for IEC-TR-62380 vs. other Prediction Standards	250
	<i>Butnicu, D.</i>	
61	Ultrasonic indoor navigation prototype for visual impaired users	254
	<i>Papara, R., Buzura, L., Galatus, R.</i>	
62	Curriculum and Training Development in the METIS project	258
	<i>Medgyes, B., Illes, B., Krammer, O., Tzanova, S., Gavra, S.</i>	
63	The investigation by numerical simulation of thermal induced deformation in a double soldered chip structure	264
	<i>Dobre, L., Bojita, A., Purcar, M., Fazakas, A.</i>	
64	Education 4.0 Lab for Digital Innovation Units – Collaborative Learning in Time of COVID-19 Pandemic	268
	<i>Ciolacu, M. I., Marcu, A-E., Vladescu, M., Stoichescu, D., Svasta, P.</i>	
65	A custom Software for the Evaluation of Single-Cell Force-Spectroscopy Data Acquired by FluidFM BOT	272
	<i>Nagy, A. G., Horvath, R., Bonyar, A., Sztilkovics, M.</i>	
66	Python based portable system for fast characterisation of foods based on spectral analysis	275
	<i>Buzura, L., Budileanu, M. L., Potarniche, I-A., Galatus, R.</i>	
67	Assisted OCT diagnosis embedded on Raspberry Pi 4	281
	<i>Buzura, L., Groza, G., Papara, R., Galatus, R.</i>	
68	Clustering of Image Data to Enhance Machine Learning Based Quality Control in THT Manufacturing	287
	<i>Thielen, N., Jiang, Z., Schmidt, K., Seidel, R., Voigt, C., Reinhardt, A., Franke, J.</i>	
69	Adaptive data predictions for the energy sector at national level	292
	<i>Vezeteu, P. V., Morariu, A. R., Nastac, D. I.</i>	
70	A simple High Voltage MOSFET behavioural model for SABER Simulator	298
	<i>Luca, O.</i>	
71	Remote Control System Based on Power Line Communication	301
	<i>Visan, D. A., Lita, A. I.</i>	
72	In-circuit Signal Measurement Method for Interleave Uniformly Spaced Sampling	305

	<i>Barbulescu, C., Marinca, M., Ilies, E.</i>	
73	A Non-invasive Diagnosis Tool Based on Hepatorenal Index For Hepatic Steatosis <i>Simion, G., Mihailov, E.</i>	309
74	COVID-19: the Shift to E-learning - Student's Perception and Outlooks <i>Marghescu, C., Drumea, A., Pantazica, M., Codreanu, N.</i>	313
75	Robotic Arm for Biological Probe Tubes Handling <i>Szolga, L. A., Opra, R. T.</i>	317
76	Low-Cost Peristaltic Pump for Laboratory Applications <i>Szolga, L. A., Heredea, P. C., Potarniche, I-A.</i>	322
77	Ultrasound liver steatosis diagnosis using deep convolutional neural networks <i>Simion, G., Barbu, P. A., Caleanu, C.</i>	326
78	Study on Counter-flow Air to Air Heat Exchange for Air Handling Unit of Smart Buildings <i>Nicolau, V., Andrei, M., Petrea, G.</i>	330
79	On Flight Real Time Image Processing by Drone Equipped with Raspberry Pi4 <i>Szolga, L. A.</i>	334
80	4-Cell Passive Battery Management System for Automotive Applications <i>Guran, I. C., Perisoara, L., Sacaleanu, D. I.</i>	338
81	IoT module for air quality measurement <i>Niculescu, A-M., Pavel, D-M., Dumitrascu, A., Elisei, N., Moise, V. M.</i>	342
82	Rechargeable portable battery differentiation based on electrical characterization <i>Fazakas, A., Purcar, M.</i>	346
83	Multipoint Data Acquisition System for Thermal Analysis of Electronic Modules <i>Visan, D. A., Lita, A. I.</i>	350
84	Sniffer. Testing the radio function of water and heat meters. <i>Butean, F-M., Stanga, I-I., Lie, I.</i>	354
85	Calibration of Time-of-Flight Ultrasonic Flow Meters <i>Butean, F-M., Lie, I., Lica, S.</i>	358
86	Two New Boost Converters Exhibiting Zero-Ripple Input Current Both in CCM and DCM Operation <i>Ionici, C., Lascu, D.</i>	362

87	Analysis of the Input Filter Parameters for a Power Matrix Converter <i>Popovici, A., Mutiu, R.</i>	366
88	The Experimental Determinations at the Wind Farm Fantanele – Cogealac in Dobrogea <i>Jolian, R., Lung, C., Horgos, M.</i>	369
89	Study on Techniques for the Increase of the Current Carrying Capability of the PCB Tracks <i>Drumea, A., Marghescu, C.</i>	374
90	Digital Solutions for Smart Food Supply Chain <i>Suciuc, G., Pop, I., Pasat, A., Calescu, S., Vatasoiu, R., Suciuc, I.</i>	378
91	Role of 5G in Vehicular Network for Smart Vehicles in Smart Cities <i>Suciuc, G., Hussain, I., Esanu, I. A., Beceanu, C., Vatasoiu, R., Vochin, M-C.</i>	382
92	New FPGA design solution using quantum computation concepts <i>Mazare, A. G., Ionescu, L. M., Lita, I., Serban, G., Belu, N.</i>	388