

2023 31st National Conference with International Participation (TELECOM 2023)

**Sofia, Bulgaria
16-17 November 2023**



**IEEE Catalog Number: CFP23V40-POD
ISBN: 979-8-3503-0330-8**

**Copyright © 2023 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:	CFP23V40-POD
ISBN (Print-On-Demand):	979-8-3503-0330-8
ISBN (Online):	979-8-3503-0329-2
ISSN:	2837-5238

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

Design and Optimization of Wireless Sensor Network Based on RP2040 and ESP8266	1
<i>Milen Hrabarov Todorov</i>	
Implementation of an Agile SDLC CI/CD Pipeline for Managing a SDN VXLAN-EVPN Fabric	5
<i>Spas Georgiev, Kamelia Nikolova</i>	
Universal Interpersonal Communication Application Prototyping.....	9
<i>Lazar Pendov</i>	
Manipulator with Parallel Kinematics for Teaching Robotics.....	13
<i>Yassen Gorbounov, Yosif Bekyarov, Hao Chen, Nikolay Lakov</i>	
Robotics in Education: A Comparative Analysis of Robotic Platforms Across Educational Levels	17
<i>Georgi Georgiev, Georgi Hristov, Plamen Zahariev, Diyana Kinaneva</i>	
A Chat Client-Server Application for E-Learning	21
<i>Serafeim A. Triantafyllou</i>	
Understanding Student Motivation in Digital Education.....	25
<i>Nikolay Nikolov</i>	
Image Processing Methods for Microorganisms Adapted for Laboratory Exercises.....	30
<i>George Todorov, Lilyana Docheva, Ivo Dochev, Stoycho Manev</i>	
Using Python for Development of an Application for Building and Experimenting with GPSS Simulation Models	34
<i>Aleksandar Hristov</i>	
Vision and Control Capabilities of Autonomous Systems with the Kria Adaptive System-On- Modules	38
<i>Yassen Gorbounov, Petar Peychinov</i>	
Prediction of Radio Wave Attenuation Due to Clouds by Using Support Vector Machine Model	42
<i>Hitesh Singh, Vivek Kumar, Boncho Bonev, Kumud Saxena, Vinod M Kapse, Ramjee Prasad</i>	
Prediction of Radio Wave Attenuation Due to Rain by SVM.....	46
<i>Vivek Kumar, Hitesh Singh, Kumud Saxena, Boncho Bonev, Vinod M Kapse, Ramjee Prasad</i>	
Neural Network Architecture to Predict Radio Wave Attenuation in a 5G Network	50
<i>Rosen Pasarelski, Georgi Petrov, Teodora Pasarelska, Krasen Angelov</i>	
Life Cycle Evaluation of Photovoltaic Panels	55
<i>Plamen Stanchev, Gergana Vacheva, Nikolay Hinov, Dardan Klimenta</i>	
Modeling of Energy Flows in Microgrids	59
<i>Plamen Stanchev, Gergana Vacheva, Nikolay Hinov, Dardan Klimenta</i>	
On the Capacity of Vehicular Communications	63
<i>Paschalis C. Sofotasios, Seong Ki Yoo, Nidhi Simmons, Simon L. Cotton, Mikko Valkama</i>	
Road Traffic Analysis for Management of the Intelligent Transport System	67
<i>Rosen Miletiev, Georgi Mladenov, Rumen Yordanov, Durhan Saliev, Vladimir Hristov</i>	

Dynamic Model and Adaptive Velocity Control of a Robotic Walker for Motion Support.....	71
<i>Plamen Petrov, Ivan Kralov</i>	
Development of a Mobile Autonomous Chassis for Studying Grassland Areas by Using Thermal Cameras	75
<i>Iliyan Damyanov, Durhan Saliev, Rosen Miletiev, Kalin Dimitrov</i>	
Prediction of Motion Trajectory of a Moving Object.....	79
<i>Ventsislav Nikolov, Ivo Rakitin</i>	
Enabling Cybersecurity Mechanisms in a SmartPatch-Based Emergency Response System	83
<i>Magdalena Kostoska, Vladimir Trajkovik, Bojana Koteska, Nevena Ackovska, Fedor Lehocki, Ana Madevska Bogdanova</i>	
Integrated Process Management Environment for Educational Institutions.....	87
<i>Georgi Kolev, Elena Koleva</i>	
Developing and Experimenting Simulation Model of DDoS Attacks in IIoT Networks Using Python.....	91
<i>Aleksandar Hristov, Galya Pavlova, Kamelia Raynova</i>	
Development and Research of an IoT WSN for Measuring Fine Dust Particles PM10 and PM2.5	95
<i>Dimitar Tokmakov, Stanislav Asenov, Slavi Lubomirov, Stela Stoyanova, Vesela Yancheva, Slaveya Petrova, Bogdan Nikolov, Elenka Georgieva, Rumen Popov</i>	
Workflow Design for Implementation of In-Silico Experiments with Big Biomedical Data Streams	100
<i>Stella Vetova</i>	
Automated System for Tracking the Condition of a Patient's Feet and Selecting Specialized Insoles	104
<i>Ivan Ralev, Despina Georgieva, Irinka Hristova, Greta Koleva</i>	
Cyber-Physical System for Smoke Detection and Recognition with Smart Glasses	108
<i>Nikolay Gospodinov, Georgi Krastev</i>	
Digital Twin Management Systems – Challenges, Application, Development	112
<i>Ivan Stankov, Varbinka Stefanova-Stoyanova</i>	
Study on the Relationship Between Rumination Number and Udder Surface Temperature in Cows Using Infrared Thermography	116
<i>Hristo Hristov, Kalin Dimitrov, Toncho Penev</i>	
A Practical Guide to Deploying Smart Contracts and Orchestrating Digital Ecosystems: Transitioning from Fiat Payment Systems to Digital Economies for Institutional and Academic Institutions	119
<i>Martin Kaloev, Georgi Krastev</i>	
Health Monitoring of Microsoft Defender for IoT Implementation	123
<i>Marian Hristov, Maria Nenova, Kamelia Nikolova, Viktoria Dimitrova</i>	
Studying the Impact of Various DoS Attacks on the Network Performance of a Power Electronic Device.....	127
<i>Ivan Nedyalkov, Georgi Georgiev, Anton Gogushev</i>	
Implementation of Blockchain Technology in Electronic Voting Systems.....	131
<i>Angel Georgiev, Vladimir Valkanov</i>	

Secure Text Encryption Based on Clifford Attractors	135
<i>Tsvetelina Ivanova, Borislav Stoyanov, Dimitar Dobrev</i>	
EU Cybersecurity Theory and Practice	139
<i>Ivan Stankov</i>	
CyberAttacks and Robotics	143
<i>Grozdan Hristov, Ivan Stankov, Dayana Mladenova</i>	
Web Scraping - State of Art, Techniques and Approaches.....	147
<i>Irena Valova, Tsvetelina Mladenova, Gabriel Kanev, Tsvetana Halacheva</i>	
Exploiting Android Using Metasploit Framework	151
<i>Ivan Ivanov, Mariyana Dimitrova, Maya Atanasova</i>	
Antivirus Bypass of Payloads to Launch Advanced Client-Side Attacks	154
<i>Ivan Ivanov, Mariyana Dimitrova, Maya Atanasova</i>	
Signal Processing Techniques Used in Speech Recognition Or Synthesis - An Overview.....	157
<i>Ivan Ralev, Georgi Krastev</i>	
Creating HDR Image Using Linear Step-By-Step Contrast Changes.....	161
<i>Olena Osharovska, Mikola Patlayenko, Valentina Solodka</i>	
Synthesis of Fractal Images in the Problems of Compression of Static and Dynamic UHD Images	165
<i>Stanislav Galchuk, Irina Tregubova, Mykola Patlaienko</i>	
Web-Based Remote Laboratory for Programming Arduino-Based Experiments	169
<i>Ventsislav Nachev</i>	
Applying Additive Manufacturing to Engineering Education	173
<i>Slavi Lyubomirov, Stanislav Asenov, Dimitar Tokmakov, Hristo Kanevski, Daniela Shehova, Slaveya Petrova</i>	
Case Study of 3D Scanning and Processing to Create Virtual 3D Plant Objects for Education.....	177
<i>Slavi Lyubomirov, Stanislav Asenov, Dimitar Tokmakov, Hristo Kanevski, Daniela Shehova, Slaveya Petrova</i>	
Hot Access Network Change (HAC) Facilitated by 3P-AAA and 3P-C&B.....	182
<i>Ivan Ganchev</i>	

Author Index