

2021 IEEE 8th International Conference on Adaptive Science and Technology (ICAST 2021)

**Accra, Ghana
25 – 26 November 2021**



**IEEE Catalog Number: CFP2192F-POD
ISBN: 978-1-6654-2718-0**

**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:	CFP2192F-POD
ISBN (Print-On-Demand):	978-1-6654-2718-0
ISBN (Online):	978-1-6654-2717-3
ISSN:	2326-9413

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

Table of Contents

Adaptive Science & Technology (ICAST)	i
Message from Conference General Chair	iii
Message from Ghana Section Chair.....	v
Committees	vii
Technical Programme Committee Members	vii
Program-At-A-Glance.....	viii
Technical Papers	ix
Author Index	xi

Technical Papers

Order of Technical Paper Presentation

Thursday 25 November 2021

Session **In-Person Technical Session 1**
Date/Time **Thursday 25 November 2021 / 01:00 – 14:30**
Session Chair **Dr. Joseph Essandoh-Yeddu, UCC Ghana**

S/N	Paper ID	Paper Title	Author	PG
1	7	Design of a Compact Monopole Antenna for Super Wideband and 5G Applications	<i>Owusu Joseph</i>	1
2	12	Vulnerability Analysis of Online Banking Sites to Cross-Site Scripting and Request Forgery Attacks: A Case Study in East Africa	<i>Robert A. Sowah</i>	6
3	13	Real-time Monitoring of Nitrate Concentrations in Groundwater Using Wireless Sensor Network	<i>Robert A. Sowah</i>	11
4	17	Design and Development of Computer Vision-Based Driver Fatigue Detection and Alert System	<i>Robert A. Sowah</i>	17
5	25	Modelling and Simulation of Magnetic Fields in the Vicinity of High Voltage Transmission Line	<i>Amevi Acakpovi</i>	23
6	16	Investigating Factors Affecting Material Selection: The Impacts on Climate-Friendly Materials in Energetic Expense Reduction	<i>G. Sarpong-Nsiah</i>	29

Session **In-Person Technical Session 2**
Date/Time **Thursday, 25 November 2021 / 14:30 – 16:00**
Session Chair **Ing. Isaac Kweku Boakyie, GCAA, Ghana**

S/N	Paper ID	Paper Title	Author	PG
1	30	Mobile Application for Power Substation Monitoring for Maintenance Operations	<i>Godfrey Mills</i>	35
2	32	Evaluating Overvoltage Protection Scheme of Pole Mounted Transformers Employed by ECG	<i>George Eduful</i>	41
3	10	Design and Development of Shuttlefy: A Smart Shuttle System for University of Ghana Campus	<i>Robert A. Sowah</i>	47
4	9	Mobile Application for Electricity Meter Reading & Billing Using Image Processing and Machine Learning	<i>Robert A. Sowah</i>	54
5	18	A Multi-Criteria Approach for Energetic Expense Cut Back Through Climate-Friendly Material Selection for Office Building Development: A Conceptual Framework	<i>G. Sarpong-Nsiah</i>	61
6	15	A Multi-Criteria Approach for Energetic Expense Cut Back Through Climate-Friendly Material Selection: Office Building Construction, Ghana	<i>G. Sarpong-Nsiah</i>	67

Order of Technical Paper Presentation

Friday, 26 November 2021

Session **Virtual Technical Session 1**
Date/Time Friday, 26 November 2021 / 10:00 – 11:30
Session Chair Dr. William A. Agangiba, University of Mines and Technology, Tarkwa

S/N	Paper ID	Paper Title	Author	PG
1	20	Patch-Based Capsule Network for Complex Images	<i>Ayidzoe Mighty Abra</i>	73
2	24	Exploring Optimized Capsule Network on Complex Images for Medical Diagnosis	<i>Yaw Afriyie</i>	80
3	26	Content-Based Image Retrieval Framework for Classification of Cocoa Beans	<i>Ezekiel Mensah Martey</i>	85
4	18	A Multi-Criteria Approach for Energetic Expense Cut Back Through Climate-Friendly Material Selection for Office Building Development: A Conceptual Framework	<i>G. Sarpong-Nsiah</i>	61

Session **Virtual Technical Session 2**
Date/Time Friday, 26 November 2021 / 11:00 – 12:00
Session Chair Dr. Millicent Agangiba, University of Mines and Technology, Tarkwa Ghana

S/N	Paper ID	Paper Title	Author	PG
1	19	Solid Waste Monitoring and Revenue Generation System	<i>Isaac Aboagye</i>	91
2	22	IoT Based Street Light Controller and Monitoring System	<i>Amevi Acakpovi</i>	97
3	33	Guaranteeing Secrecy for Single FDA Antenna System Over Nagakami-m Fading Channels: Half-Duplex Approach	<i>Shadrack Yaw Nusenu</i>	104
4	27	Oil Film Characterization of PTFE During EHL Point Contact and Pure Rolling Tribology Tests	<i>Glenn K Gyimah</i>	109

Session **Virtual Technical Session 3**
Date/Time Friday 26 November 2021 / 12:00pm – 1:00pm
Session Chair Dr. Shadrack Yaw Nusenu, Koforidua Technical University, Koforidua, Ghana

S/N	Paper ID	Paper Title	Author/Presenter(s)	PG
1	28	Performance Evaluation of QR Code Scanners	<i>Ezekiel Mensah Martey</i>	127
2	29	Compact High Gain Elliptical Patch Antenna for Satellite Synthetic Aperture Radar	<i>Ebenezer T Ashong</i>	133
3	11	Data-Driven Demand Side Orchestration in a Smart Grid Environment	<i>Okafor Wisdom</i>	137
4	31	Real-Time Monitoring and Control Covid-19 Disinfection System with Access	<i>Mohammed Yussif Umaru</i>	142