2022 2nd International Conference on Advanced Research in Computing (ICARC 2022)

Belihuloya, Sri Lanka 23 – 24 February 2022



IEEE Catalog Number: CFP22BM0-POD ISBN: 978-1-6654-0742-7

Copyright © 2022 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:
 CFP22BM0-POD

 ISBN (Print-On-Demand):
 978-1-6654-0742-7

 ISBN (Online):
 978-1-6654-0741-0

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



Contents

Organizing Committee	111
Technical Program Committee	v
Editorial Board	vii
Advisory Panel	viii
Panel of Reviewers	ix
Message from the Vice Chancellor	xiv
Message from the Dean of the Faculty	xv
Message from the Head of the Department	xvi
Message from General Chair - ICARC 2022	xvii
Keynote Address by Assoc. Prof. (Dr) Supavadee Aramvit	xxiv
Keynote Address by Dr. Nalin Asanka Gamagedara Arachchilage	xxv

Artificial Intelligence and Machine Learning Track

Intelligent System to Verify the Effectiveness of Proposed Teacher Transfers Incorporating Human Factors	
VJ Karunanayake, JC Wanniarachchi, PN Karunanayake, and UU Samantha Rajapaksha	1 - 6
IoT-Based Soil Nutrient Analyser Using Gaussian Process Regression	
Isuru Senevirathne, Thanuja Ambegoda, Ruchira Wijesena, and Indika Perera	7 - 12
Predicting the Next Word of a Sinhala Word Series Using Recurrent Neural Networks	
NTK Naulla and TGI Fernando	13 - 18
Detecting COVID-19 Pneumonia using Chest-Xrays through Deep Learning Techniques	
AB Meepaganithage and MGNAS Fernando	19 - 24
GlucoFriend: Glycaemic Variability Prediction for Diabetes Patients	
Shehan Guruge and Pumudu Fernando	25 - 30
Prediction Of Potentially Hazardous Asteroids Using Deep Learning	
RKMT Nishavi Ranaweera and TGI Fernando	31 - 36
Prosody Transfer from a Small Amount of Voice using Fine Tuning	
Taiga Tokushima, Ryohei Orihara, Yuichi Sei, Yasuyuki Tahara, and Akihiko Ohsuga	37 - 42

End-to-End Automated Crossword Solver using Image Processing, Natural Language Processing and Neural Ne TLH Gammedda and MGNAS Fernando	twork 43 - 48
Facial Feature Identification in the Deep Learning Based Apparent Personality Detection WMKS Ilmini and TGI Fernando	49 - 54
A Path Planning Drone Solution to Safe Pesticide Usage in Arable Lands Akarshani Amarasinghe, Lakshman Jayaratne, and Viraj B Wijesuriya	55 - 60
Deep Learning Approach for Designing and Development of Risk Level Indicator for Patients with Lung Diseases	
KBAB Chathurika and A Gamage	61 - 65
Versatile Automatic Piano Reduction Generation System by Deep Learning Yuki Hoshi, Ryohei Orihara, Yuichi Sei, Yasuyuki Tahara, and Akihiko Ohsuga	66 - 71
Transfer Learning Techniques with SVM For Covid-19 Disease Prediction Based On Chest X-Ray Images GHGSAD Dhanapala and S Sotheeswaran	72 - 77
Machine Learning Approach to Detect Online Shopping Addiction AGS Nawodya and BTGS Kumara	78 - 83
Moving a Robot in Unknown Areas without Collision using Robot Operating System KKP Gayashani, UU Samantha Rajapaksha, and Chandimal Jayawardena	84 - 89
Importance of User Representation in Propagation Network-based Fake News Detection: A Critical Review and Potential Improvements Sarith Imaduwage, PPNV Kumara, and WJ Samaraweera	90 - 95
Moving Robots in unknown Environments Using Potential Field Graphs Mithila Panagoda, Minuli Lokuliyange, Amadi Senarath, NKVM Nethmini Nisansala, RWADU Rajapakshe, UU Samantha Rajapaksha, and Chandimal Jayawardena	96 - 101
ROS Supported Heterogeneous Multiple Robots Registration and Communication with User Instructions UU Samantha Rajapaksha, Chandimal Jayawardena, and Bruce A MacDonald	102 - 107
Long-Term Trend Analysis for a Social Media Content Published during COVID-19 Pandemic Maneesha Caldera, Nadeera Meedin, Suresha Perera, and Indika Perera	108 - 113
Super Learner for Malicious URL Detection A Hevapathige and RMUKV Rathnayake	114 - 119
Multi-Style Printed Sinhala Character Recognition and Digitalization Using Artificial Neural Network YVANT Maduranga and S Jayalal	120 - 124
Contact Tracing of Covid-19 Patients using Tweets Damitha Perera and Jeewanee Bamunusinghe	125 - 130
The Effects of Social Media User Behavioural Factors on Hate Speech Detection Suresha Perea, Indika Perera, and Supunmali Ahangama	131 - 136
Comparison Analysis and Data Retrieval to Identify the Associated People in Social Media by Image Processing JKSL Jayakody and NT Jayatilake	137 - 141

Towards Reducing Traffic Accidents through Assisting Drivers MDK Jayawardana and K Karunanayaka	142 - 147
Exploring Twitter Messages during the COVID-19 Pandemic in Sri Lanka: Topic Modelling and Emotion Ana Suresha Perea, Indika Perera, and Supunmali Ahangama	ilysis 148 - 153
Blending Weighted TF-IDF & BERT for Improving Semantic Search Meenal Dugar	154 - 159
Power Line Detection using Unmanned Aerial Vehicle with Spherical Shell M Sumagayan, R Mangorsi, ER Aleluya, CJ Salaan, and C Premachandra	160 - 164
Data Science and Applications Track	
Chest Radiographs Classification Using Multi-model Deep Learning: A Comparative Study	
Chamodi Fernando, Hashara Kumarasinghe, Shammi Kolonne, and Dulani Meedeniya	165 - 170
Optimize Transfer Learning for Autism Spectrum Disorder Classification with Neuroimaging: A Comparative Study	
Lakmini Herath, Dulani Meedeniya, Janaka Marasingha, and Vajira Weerasinghe	171 - 176
Analyzing the Impact of Social Media on Sinhala News Dissemination in Mass Media MD Madhushika, Supunmali Ahangama, and DA Rajapaksha	177 - 182
Analyze Hate Contents on Sinhala Tweets using an Ensemble Method Madurangi Guruge, Supunmali Ahangama, and Dinithi Amarasinghe	183 - 187
Sentiment Analysis of Social Media Data using Fuzzy-Rough Set Classifier for the Prediction of the Presidential Elec Suresha Perea and Kasun Karunanayaka	etion 188 - 193
Human-Computer Interaction and Computer Vision Track	
Review on Hand Gesture Recognition for Bengali Sign Language Damitha Perera, Bimsara Kanchana, Rojith Peiris, Kasun Madushan, and Dharshana Kasthurirathna	194 - 199
CNN Based Fundus Images Classification for Glaucoma Identification KWT Shyamalee and DA Meedeniya	200 - 205
Single-User 2D Gaze Estimation in Retail Environment using Deep Learning Primesh Pathirana, Shashimal Senarath, Dulani Meedeniya, and Sampath Jayarathna	206 - 211
Interpretable Machine Learning for Brain Tumor Analysis Using MRI Sasmitha Dasanayaka, Sanju Silva, Vimuth Shantha, Dulani Meedeniya, and Thanuja Ambegoda	212 - 217

2 nd International Conference on Advanced Research in Computing	ICARC 2022
A Hop-count and Neighbor-count based Routing Protocol for Flying Ad-hoc Networks AACD Adikari and K Thabotharan	296 - 301
AACD Adikari and K Inaboinaran	290 - 301
Development of Agent-Based Centralized Tool for Analyzing and Managing Security-Enhanced Linux	Policies
using WebSocket Protocol	
Ishara Madushanka Kularatna and UU Samantha Rajapaksha	302 - 307
Techniques of Enhancing Synchronization Efficiency of Distributed Real Time Operating Systems	
AWHP Alagalla and UU Samantha Rajapaksha	308 - 313
The Design and Implementation of an IOT-based Real-time Air Purification System for Outdoor Envir	conment
HMRG Herath, KKWSPK Jayasundara, YKA Yadhasighe, and SDA Sanjeewa	314 - 319
Computational Study on SARS-CoV-2 Viral Protein Interaction with Natural Compounds of Coriandrus	m sativum
L DD Downer CDDM Consultations and CH account this was	320 - 325
RP Perera, SPBM Senadheera, and S Hewapathirana	320 - 323
Parallel and Distributed Computing Track	
Wavelength Conversion Approach with Resource Sharing in Survivable Elastic Optical Networks	
Satkunarajah Suthaharan, Lathagini Sivarasa, and Dimuth Prasanna	326 - 331
Microservice based Edge Computing Architecture for Internet of Things	
RMBS Nisansala, SAGL Chandrasiri, LBS Prasadika, and U Jayasinghe	332 - 337
A Blockchain-Based Model to Improve Patent Authentication and Management Process	
Prageeth Thilina Gunasekara and Chathura Rajapakse	338 - 343
A Parallel Distributed Cluster Computing Model for Z-score Computation in Respect of Sri Lankan U	niversity Admissions
K Santhanakrishnan and V Senthooran	344 - 348
Software Engineering Track	
An Improved Round Robin Algorithm for an Efficient CPU Scheduling	
AM Oshani Bandara and UU Samantha Rajapaksha	349 - 354
Classifying Source Code Using Boosting Algorithms	
Mohamed Ifham, BTGS Kumara, Kuhaneswaran Banujan, Prasanth Senthan, and EMUWJB Ekan	nayake 355 - 360
Investigating the Performance in SDN Based Data Centers Under Different Network Topologies	
KGRP Hemachandra, KPN Jayasena, Windhya Rankothge, and MPM Wijesiri	361 - 366

Technology-enhanced Learning and Teaching Track

Voice-based Online Examination System for Visually Impaired Students IHHN Dharmasena and JADCA Jayakody	367 - 372
Classifying Documents based on Formal and Informal Writing Styles using Machine Learning Algorithms KMGS Karunarathna, RAHM Rupasingha, and BTGS Kumara	373 - 378
A Knowledge-Based Adaptive Algorithm to Recommend Interactive Learning Assessments DPS Jayasiriwardene and DA Meedeniya	379 - 384
A Comparative Study of Predicting Students' Academic Performance Using Classification Algorithms MPRIR Silva, RAHM Rupasingha, and BTGS Kumara	385 - 390
Interpretable Student Performance Prediction Using Explainable Boosting Machine for Multi-Class Classifica-	
tion Shyaman Jayasundara, Amila Indika, and Damayanthi Herath	391 - 396