2021 International Conference on Innovative Computing (ICIC 2021)

Lahore, Pakistan
9-10 November 2021

Pages 1-528

IEEE Catalog Number: CFP21V24-POD
ISBN: 978-1-6654-0092-3

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: CFP21V24-POD
ISBN (Print-On-Demand): 978-1-6654-0092-3
ISBN (Online): 978-1-6654-0091-6

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

A Comprehensive DCell Network Topology Model for a Data Center……..…1
Antonio Cortés Castillo

Analysis of Corpus Development for Urdu Language……..…...….7
Asma Naseer, Tanzeela Shakeel, Kinza Arshad, Zeenia Ather

Artificial Intelligence and Criminal Culpability……..……...…12
Khushboo Farid Khan, Atif Ali, Zulqarnain Farid Khan, Hajra Siddiqua

Autonomous object detection and tracking robot using Kinect v2…….…….19
Syed Mujtaba Mehdi, Rizwan Ali Naqvi, Syed Zin Mehdi

An Integrated Framework for Sentiment Analysis of Giant Cold Drinks Companies…….....31
Tahir Mohammad Ali, Ali Nawaz, Attique Ur Rehman

Modeling the Strategies to Control the Impact of Photochemical Smog on Human Health……..….36
Aqsa Chaudary, Mian Muhammad Mubasher, Syed Waqar ul Qounain

Vehicle Tracking System and Speed Estimation Utilizing Optimal Technique……..……46
Waheed Javed, Muhammad Danish, Hassan Tahir, Hina Bashir

Heuristic and think aloud method to Evaluate the low fidelity prototype Of game-based language learning Application……..……..….53
Kashif Ishaq, Fadhilah Rosdi, Nor Azan Mat Zin, Adnan Abid

A Systematic Literature Review on Cognitive Radio Networks……...…...…...64
Tanzeela Shakeel, Shanzay Gul, Shahista Habib, Ateeqa Naseer

Implementation of Blockchain in Healthcare: A Systematic Review……..……...75
Ammara Karim Noon, Omer Aziz, Insia Zahra, Muhammad Anwar

Requirements Elicitation for Game-based Language Learning Application…….…….86
Kashif Ishaq, Fadhilah Rosdi, Nor Azan Mat Zin, Adnan Abid

Blockchain and Its Implementation for Charitable Organizations……..……96
Iqra khalil, Omer aziz, Numan asif

Usability Evaluation of Blind and Visually Impaired Interface in Solving the Accessibility Problems……....106
Azeem Shera, Muhammad Waseem Iqbal, Muhammad Raza Naqvi, Syed Khuram Shahzad, Muhammad Hasnain Sajjad, Abdul Rehman Shafqat, Muhammad Mohsin Saeed

DarkNet-19 based Decision Algorithm for the Diagnosis of Ophthalmic Disorders……..…..…....113
Zainoor Ahmad Choudhry, Hira Shahid, Syed Zohaib Hassan Naqvi, Sumair Aziz, Muhammad Umar Khan

Genome Scale Phylogenetic Analysis Differentiates SARS-CoV-2 Strains in Pakistani and Indian COVID-19 Patients with and without Travel History……..……120
Hafiz Abdul Rehman, Farheen Ramzan, Zarrin Basharat, Muhammad Shakeel, Muhammad Usman Ghani Khan, Ishtiaq Ahmad Khan

China-Pakistan Economic Corridor (CPEC): Exploring the breakthrough of different Social Media Platforms in CPEC…….…...130
Ayesha Siddiqua, Tayyaba Anees, Ateeqa Naseer, Afifa Wajid, Nosheen Manzoor, Tayaba Anjum

Role of Blockchain Technology in Healthcare: A Systematic Review……..…...137
Waheed Javed, Fatima Aabid, Muhammad Danish, Hassan Tahir, Rida Zainab

A Survey on Phishing Emails Detection Techniques……..…….....144
Amgad Muneer, Rao Faizan Ali, Abdo Ali Al-Sharai, Suliman Mohamed Fati

Design and Development of Low Cost, Wireless Controlled, 3D Prosthetic Hand using Flex Sensors……150
Syed Ammad Ali Hiader, Ali Nasir, Muhammad Ameen, Ali Raza, Aashir Waleed, Zeeshan Ali

EPS: An earthquake prediction system using Federated Learning……..…..157
Rabia Tehseen, Muhmmad Shoaib Farooq, Adnan Abid

VQ Based Comparative Analysis of MFCC and LPC Speaker Recognition System……..…….165
Iqra Naveed, Farwa Saher, Muhammad Nadeem Ali, Muhammad Sajid Farooq, Taimoor Hasan, Aqsa Iftikhar

Development of Time and Energy Efficient, Smart Parking System……..…..172
Mussarat-ul-Ain, Muhammad Talha Usman, Ahmad Hassan, Ali Akbar, Aashir Waleed, Abdullah Hasham

Basic Structure of Natural Language Processing Applied on Multiple Domains: Review……...…….180
Taimoor Hassan, Abrar Ahmad, Mehmood Anwar, Muhammad Nadeem Ali, Farva Saher, Muhammad Sajid Farooq

A Model Driven Framework for Standardizing Requirement Elicitation by Quantifying Software Quality Factor…….…….....187
Sadia Khalid, Uzair Rasheed, Muhammad Abbas

Issues and Algorithm of Distributed Shared Memory……...……...…….194
Mian Basam Ahmad, Sundas Sagheer

Heart Attack Disease Data Analytics and Machine Learning……..……..…...203
Muhammad Nabeel, Mazhar Javed Awan, Mohsin Raza, Hooria Muslih-ud-Din, Shumaila Majeed

An Analysis of Requirement Engineering Practices in Pakistani Software Houses……..……209
Ateeqa Naseer, Sadia Khalid, Tayyaba Anees, Tanzeela Shakeel, Mehr-un-Nisa, Fasiha Ashraf

Comparative Study of Comparison-based Sorting Algorithms…….…….…..215

Zainab Inayat, Rabia Sajjad

A Systematic Literature Review: Usage of Logistic Regression for Malware Detection……..……223
Zeeshan Akram, Mamoona Majid, Shaista Habib

Role of Data Mining and Machine Learning in Software Reusability……...……231
Rabia Qayyum, Joveria Rubaab, Umer Riaz, Dr. Fahim Arif

Application of Generalized Relevance Linear Vector Quantization for Diabetes Diagnosis……...…239
Alaa Ali Hameed, Akhtar Jamil, Zeynep Orman, Syed Attique Shah

Comparison of Machine Learning Classifiers for Breast Cancer Diagnosis……...……244
Muhammad Asad Arshed, Wajeeha Qureshi, Muhammad Rumaan, Muhammad Talha Ubaid, Abdul Qudoos, Muhammad Usman Ghani Khan

Modified Nominal Group Technique (NGT) for Evaluating HyTEE Model (Hybrid Software Change Management Tool with Test Effort Estimation)……..……..250
Mazidah Mat Rejab, Nurulhuda Firdaus Mohd Azmi, Suriayati Chuprat

A Textile Image Classification based on Texture and Shape Features……...……...258
Muhammad Kashif Nazir, M. Ahmad Nawaz Ul Ghani, Aysha Ashraf, Syed Mudassar Alam, Rao Umer Farooq, Zohaib Latif

Comparison of Ensemble Techniques for Prediction of Pedestrian Desired Direction……...…..……264
Ahmad Ali, Shaharyar Kamal, Waqas Nawaz

Influential Factors for Tourist Profiling for Personalized Tourism Recommendation Systems– A Compact Survey…….…….270
Maryam Kamal, Ioannis Chatzigiannakis.

Automatic Helmet Detection using EfficientDet……..……..…….276
Muhammad Talha Ubaid, Amara Kiran, Muhammad Tayyab Raja, Umme Aliza Asim, Abdou Darboe

Internet of Everything: Applications, and Security Challenges…….…...284
Muhammad Sajid, Ali Harris, Shaista Habib

Comparative Analysis of Data Driven Prediction Modeling Strategies for Aquaculture Healthcare……...….293
Shahzad Amin, Francesca Cuomo, Maryam Kamal

An Effective Technique for Detecting Defecting Parts of Fabric in Digital Image……...……299
Muhammad Arslan Rauf, Muhammad Abubakar, Ubaid Ullah, Nazeef Ul Haq

Multi-criteria Dual-View Attention Network for Rating Prediction……...…305
Salem Moqa, Muhammad Ismail, Ali Zakir, Jianfeng Lu

Detection of Phishing Websites through Computational Intelligence…….….313

Muhammad Taseer Suleman, Amir Ali

A Novel Bio-Inspired Path Planning for Autonomous Underwater Vehicle for Search and Tracing of Underwater Target……...320
Adnan Elahi Khan Khalil, Shahzad Anwar, Ghassan Husnain, Atif Elahi, Zhang Dong

Implementation and Comparative Analysis of Semi-Automated Surveillance Algorithms in Real Time using Fast-NCC……..…….…….…….…….……327
Omer Khan, Raheel Muzzammel, Umair Tahir, Omar Azeem, Rabia Arshad and Muhammad Umer

Kett Mangoes Detection in the Gambia using Deep Learning Techniques…….....…….333
Muhammad Talha Ubaid, Abdou Darboe, Fred Sangol Uche, Adama Daffeh, Muhammad Usman Ghani Khan

Comparative Analysis of Low Complexity Signal detection methods in Uplink Massive MIMO……...…….341
Muhammad Masoom Ul Hussan Rehan

Automated And Dynamic Access Control Management in OSN…….……348
Sohail Abid, Imran Daud

A Majority Voting based Ensemble Approach of Deep Learning Classifiers for Automated Melanoma Detection……..…….…..…..354
Khadija Safdar, Shahzad Akbar, Ayesha Shoukat

COVID-19 SOP's Violations Detection in Terms of Face Mask Using Deep Learning…….…...……360
Muhammad Talha Ubaid, Muhammad Zeeshan Khan, Muhammad Rumaan, Muhammad Asad Arshed, Muhammad Usman Ghani Khan, Abdou Darboe

Exploiting Temporal Information of Videos for Facial Landmark Detection: A Modified SDM…….....367
Iqra Rashid, Sana Basharat, Faria Ferooz, Syed Fawad Raza

Effect of Lean Software Development on the Small Organizations Using LSD Approach……...……377
Zaeem Anwaar, Farasat Ullah Khan, Mehwish Naz, Muhammad Usman Farooq

Machine learning in the prediction of nonsyndromic Orofacial Cleft in Pakistan……...……..385
Javaria Qadeer, Faisal Bukhari, Waheed Iqbal

A Deep Learning-based Automatic Method for Early Detection of the Glaucoma using Fundus Images…….391
Ayesha Shoukat, Shahzad Akbar, Khadija Safdar

Assessment of Critical Challenges Faced by Students and Significance of Cutting Edge Technologies in Pakistan Education during COVID-19 Pandemic……..…….…..397
Muhammad Sohail, Muhammad Bilal, Abid Bashir, Muhammad Farooq, Muhammad Ali Hussain

Factors Effecting Businesses due to Distributed Denial of Service (DDoS) Attack……..……404
Hafsa Mateen, Malik Shahzad Kaleem Awan

A Study on Detection of Chronic Renal Failure Based on Machine Learning……..……411
Usama Pervaiz, Dr. Faisal Bukhari, Dr. Waheed Iqbal

Energy Efficient Millimeter Wave Backhauling in 5G Heterogeneous Network……..……...421
Abdul Qahar, Kartinah Zen, Muhammad Anwar, Awais Khan

IoT Based Smart Environmental Monitring System Using ESP32/We-Mos D1 Mini & ThingSpeak…….....427
Muhammad Afzal, Hafiz Ali Hamza Gondal, Muhammad Najeeb Ullah, Saad Akbar

Smart city technologies, key components, and its aspects…….....433
Usama Tariq Khan, Muhammad Fahad Zia

An Embedded Solution of Gaze Estimation for Driver Assistance using Computer Vision……..…...443
Hafiz Umer Draz, Muhammad Ikram Ali, Muhammad Usman Ghani Khan, Muneeb Ahmad, Salman Mahmood, Muhammad Abdullah Javaid

IoT Based Smart Gloves for Women Safety……...…….…….450
Zahid Ali, Majid Ali Khan, Omar Bin Samin, Musadaq Mansoor, Maryam Omar

A Seamless Handoff Scheme for Mobility Management in MPLS based Wireless Network……..…....456
Zubair Hussain, Peer Azmat Shah, Sohail Abid

Indication of Health Status Using Machine Learning Linear Regression and Random Forest…….....464
Arslan Asif, Muhammad Nabeel, Mazhar Javed Awan, Muhammad Ahsan, Abdul Hannan, Shahroz Abbas

Fast Village Finder…….....470
Tayaba Anjum, Kashif Murtaza, Tayyaba Anees, Ahsan Ali

An Analysis of Initialization Techniques of Particle Swarm Optimization
Algorithm for Global Optimization……..……..…476
Waqas Haider Bangyal, Zahra Aman Malik, Iqra Saleem, Najeeb Ur Rehman

Evaluation of Activation Functions in CNN Model for Detection of Malaria Parasite using Blood Smear Images……...…….……..482
Ehsan ullah Khadim, Syed Attique Shah, Raja Asif Wagan

Predicting Article Sentiment Analysis Impact in Twitter: A Case Study in the Field of Information Sciences…….……...……488
Asma Ahmad, Faisal Bukhari, Kamran Malik

Traits Measuring Metrics for the Members of Semantic Social Network……..……..….494
Rizwan Pervez Mir, Muhammad Shoaib Farooq

Innovative Computational Moulding Approach for Genomics……...…….……500
Mehnaz Sarwar, Hassaan Malik, Insia Zahra

A Study of Image Processing Methods for Investigation of Radiographs……...……..…507
Jahangir Jabbar, Hassaan Malik, Ali Haider Khan, Muhammad Umair Ahmad, Adnan Ali

Variable Generalization Evaluation of Supervised Learning Models for Detection of Spam Messages…....512
Muhammad Saad Shahbaz khan, Muhammad Osama Akbar, Hassaan Malik, Ali Haider Khan, Zubair Akbar

Reinforcement Learning for Dialogue Generation: A Systematic Literature Review……...……..……..519
Sameera Kanwal, Muhammad Shoaib Farooq

Deep Learning Approach to Diagnose Alzheimer's Disease through Magnetic Resonance Images…..…..…529
Muhammad Faraz Ahmad, Shahzad Akbar, Syed Al E Hassan, Amjad Rehman, Noor Ayesha

Sliding Mode Control of Quadrotor UAV Using Parabolic Sliding Surface…….....535
Abdul Rehman, Naveed Mazhar, Abid Raza, Fahad Mumtaz Malik

Symptoms Based Covid-19 Disease Diagnosis Using Machine Learning Approach…….…..…541
Muhammad Asad Arshed, Wajeeha Qureshi, Muhammad Usman Ghani Khan

Survey on Sentiment Analysis of User Reviews…….……..…547
Saba Naseem, Toqeer Mahmood, Muhammad Asif, Junaid Rashid, Muhammad Umair, Mohsin Shah

A survey on computational parametric analysis of incompressible nanofluids applications in solar energy systems…….553
Usman Inayat, Shaukat Iqbal, Tareq Manzoor

Optical Handwritten with Character Recognition……...…….…….562
Syeda Binish Zahra, Shanza Moaen, Sundus Munir, Arfa Hassan, Afrozah Nadeem, Muhammad Sajid Farooq

FLOSSC:A Computer Aided Tool for Detecting Corona Virus Infections through Chest X-Ray Images…....570
Umair Bin Ahmad, Farwa Javed, M. Omer Aftab, Ayesha Nasir, Arfa Hassan, Muhammad Sajid Farooq

Sentiment Analysis of Customer for Ecommerce by Applying AI……..……..…579
M. Omer Aftab, Umer Ahmad, Shahid Khalid, Amina Saud, Arfa Hassan, Muhammad Sajid Farooq

Facebook Marketing Analytics……..……..……586
Afifa Wajid, Mazhar Javed Awan, Faria Ferooz, Saba Shoukat, Maria Anwar, Maha Mazhar

Control of Grid-tied PV Powered Charging Station for Electric Vehicles……..……..…….592
Muhammad Waqas Naeem, Jameel Ahmad, Muhammad Adnan, Khalid Ijaz, Zawar Hussain, Faran Awais Butt

Applying Multidimensional Framework in Agile Software Development (MDFA)……..……..……599
Muhammad Ahsan Arshad, Anees Ur Rahman, Yasir Hafeez, Sajid Mahmood, Muhammad Islam, Muhammad Khateeb Khan

A Comprehensive Survey on Mobile Communication Generation…….…..……606
Farhan Nisar, Samad Baseer

Diverse Dynamic Routing Protocols Distribution in the Large Network with Route Redistribution Techniques using GNS3……..…..……..……612
Mehboob Nazim Shehzad, Dr.Usman Rauf Kamboh, Muhammad Danish Taqdees, Zain Waheed, Muhammad Usman, Ahmed Mateen Buttar

Measurements of deterministic propagation models through field assessments for long-term evaluation…...619
Zain Waheed, Usman Rauf Kamboh, Mehboob Nazim Shehzad, Muhammad Danish Taqdees, Muhammad Usman, Aroosa Fatima

The best path selection using ant colony optimization and message trust in IoV……..……...….625
Abdul Rehman, Mohd Fadzil Hassan, Bushra Naeem, Yew Kwang Hooi, Muhammad Shoaib Ali

A Deep Transfer Learning Approach for Automated Detection of Brain Tumor Through Magnetic Resonance Imaging……..……..……631
Sahar Gull, Shahzad Akbar, Ijaz Ali Shoukat

Comparative Study of Open Source Automation Testing Tools: Selenium, Katalon Studio & Test Project….637
Bismal Majeed, Saba Khalil Toor, Kanwal Majeed, Moazzama Nadeem Ahmad Chaudhary

Drone-Based Campus Throughput Measurement for Ground-to-Air Channel at 2.4 GHz…….…..……643
Muhammad Danish Taqdees, Usman Rauf Kamboh, Mehboob Nazim Shehzad, Zain Waheed, Muhammad Usman, Ahmed Mateen Buttar

Multi-Step Forecasting of Global Horizontal Irradiance Using Long Short-Term Memory Network for Solving Economic Dispatch Problem……....650
Qizal Ashfaq, Abasin Ulasyar, Haris Sheh Zad, Shibli Nisar, Abraiz Khattak, Kashif Imran

Usability Evaluation of FinTech Mobile Applications: A Statistical Approach……....…..659
Abdul Wahab, Talha Mahboob Alam, Muhammad Mehdi Raza

Adoption Barriers of E-Learning in Heigher Education Institutes (HEI's) of Developing Countries - A Systematic Literature Review…….…….669
Maila Mushtaq, Aster Noor, Nosheen Sabahat

Comprehensive review of malware detection techniques……..…677
Usman Inayat, Muhammad Fahad Zia, Fahad Ali, Syed Moshin Ali, Hafiz Muhammad Ashja Khan, Wafa Noor

Computational Optimization of Energy Storage System in Managing Distribution Feeder Overloading……683
Muhammad Fahad Zia, Usman Inayat, Sajid Mahmood, Ali Harris

Wireless Sensor Networks: Security, Threats, and Solutions……..……..…689
Usman Inayat, Fahad Ali, Hafiz Muhammad Ashja Khan, Syed Moshin Ali, Kiran Ilyas, Habiba Habib

Voice Over Internet Protocol: Vulnerabilities and Assessments ……...……..…695
Hafiz Muhammad Ashja Khan, Usman Inayat, Muhammad Fahad Zia, Fahad Ali, Taila Jabeen, Syed Moshin

Personality Based E-Recruitment and CV Ranking System Using Support Vector Machine Model Classification……..……..701
Muhammad Saad Shafiq, Faran Haider, Nosheen Sabahat

Web Usability and User Experience for Pakistani E-commerce websites……..……..……707
Urooj Arshad, Tahreem Yasir, Tanzeela Shakeel

Smartphone Interface Design Issues for Pakistani Older Adults..……..…..714
Anam Riaz, Tahreem Yasir, Tanzeela Shakeel

Availability Testing of IoT-Based Health Care Devices: A Survey..…….……..…….720
Saqlain Abbas, Mehwish Naz, Zaeem Anwaar, Muhammad Usman Farooq, Farasat Ullah Khan

Using kNN Algorithm for classification of Distribution transformers Health index……..……...…726
Jahanzaib Javid, Muhammad Ali Mughal, Mustansir Karim

Quality of Service Characterization for ZigBee Networks……..….……733
Jawad Khan, Suhail Yousaf

Classification of Sentiments of the Roman Urdu Reviews of Daraz Products using Natural Language Processing Approach...……..…739
Muneeba Talat, Hira Asim, Ayesha Asmat

An Attribute Weight Estimation Using Particle Swarm Optimization and Machine Learning Approaches for Customer Churn Prediction…….…….……745
Samina Kanwal, Junaid Rashid, Jungeun Kim, Muhammad Wasif Nisar, Amir Hussain, Saba Batool, Rabia Kanwal

Classification of CT/MR Images using Convolution Neural Network……...……..…751
Syed M. Haider Shah, Noor Badshah

New local region-based model for inhomogeneous images with the simplex constraints of landmarks…...…758
Maryum Saeed, Noor Badshah, Hadia Atta

Digital Polio Vaccination System – A Proposal to Make Polio Free Pakistan……...…..…764
Samia Asloob Qureshi, Nosheen Sabahat

Teaching English and Science to the Deaf Students……..……771
Afnan Zafar, Hira Gull, Uzma Farooq, Mohd Shafry Mohd Rahim, Adnan Abid

Enhance Neighbor Discovery Protocol Security by Using Secure Hash Algorithm……...……..……777
Muhammad Usman, Usman Rauf Kamboh, Muhammad Danish Taqdees, Zain Waheed, Mehboob Nazim Shehzad, Hamza Zafar

Learning Based Approach for Facial Fiducial Points Prediction of Non Frontal Faces……..…..…785
Sana Basharat, Iqra Rashid, Syed Fawad Raza, Numan Asif, Ali Haider Khan, Muhammad Umair Ahmad

A Corpus for Measuring Retrieval Performance of Process Matching Methods……...…794
Ayesha Asmat, Afnan Iftikhar

Identification of factors effecting Covid 19…….…….800
Afifa Wajid, Faria Ferooz, Iqra Rashid

Covid-19 Detection by using Deep learning- based Custom Convolution Neural Network (CNN)…….…..…..806
Mazhar Javed Awan, Muhammad Wasif Imtiaz, Muhammad Usama, Amjad Rehman, Noor Ayesha, Hafiz Muhammad Faisal Shehzad

Role of Statistical Moments and Various Sequence- based Features in Predicting Protein Functions…...…...813
Muhammad Taseer Suleman

Analysis of Machine Learning Techniques for Detection Framework for DNA Repair Genes to help Diagnose Cancer: A Systematic Literature Review…….……..…819
Muhammad Ayaz Farid Shah, Sami Ud Din, Asghar Ali Shah

Analysis of Machine Learning Techniques for Detection of Tumor Suppressor Genes for Early Detection of Cancer: A Systematic Literature Review…….……..…829
Sami Ud Din, Muhammad Ayaz Farid Shah, Asghar Ali Shah

Predicting PTMs through Statistical Moments and Various Sequence-based Features……..……...…839
Muhammad Taseer Suleman

Mutation Detection in Genes Sequence Using Machine Learning…….……...…845
Syed Muhammad Shehryar, Muhammad Ammar Shahid, Asghar Ali Shah

Analysis of Machine Learning techniques for identification of post translation modification in protein sequencing: A Review…….……..…….…..851
Asghar Ali Shah, Muhammad Khurram Ehsan, Ali Sohail, Sheeba Ilyas

Encoder decoder based CNN for single image dehazing with a semi-supervised approach…….……...……..857
Muhammad Ismail, Ali Zakir, Salem Moqa, Jianfeng Lu

PAT-PseAAC: Prediction of acetyl threonine in protein sites with statistical moments and chou's 5 step rule…….……..864
Sawabia Naseem

HIV-1 Protease Cleavages……..…….…873
Muhammad Abdullah, Seher Ansar Khawaja, Muhammad Farooq

E-Challan System Implemented in Lahore Using Digital Image Processing……..…..……879
Muhammad Zunnurain Hussain, Muhammad Zulkifl Hasan, Nadeem Sarwar, Junaid Nasir, Naila Aslam

Code Vision: Learning Mobile Application…….……885
Muhammad Zunnurain Hussain, Muhammad Zulkifl Hasan, Nadeem Sarwar, Junaid Nasir, Naila Aslam

A Review on Fog Computing for the Internet of Things……..……..……..…..892
Waheed Javed, Muhammad Danish, Fatima Aabid, Syeda um e Rubab, Sidra Ikram, Khawaja Ubaid ur Rehman

Cloud application importance and challenges: A Systematic Review…….……...…..898
Muhammad Zunnurain Hussain, Muhammad Zulkifl Hasan, Nadeem Sarwar3, Junaid Nasir, Naila Aslam

Detection of Genetic Colon Cancer……..……904
Jabar Saleem, Amna Arsahd

Prediction model for IcRNA aubcellular localization using machine learning…….....……913
Zareen Kalim, Amna Arshad

Protien-DNA binding sites Prediction…….……..…….……..923
Sania Srhar, Amna Arshad, Ahsan Raza

Two class weather classification with bagging technique…..……..…..……..…..…933
Haider Ali Baig, Amna Arshad, Ahsan Raza

Classification of lncRNA and mRNA using k-mers and random forest……..…..…939
Rana M. Nadir, Hafsa Mateen, Saif u Din

Recent advancements in predicting protein phosphorylation sites using machine learning methods……947
Adil Yousaf, Muhammad Rashid Rasheed, Muhammad Arif, Abdullah Yousafzai, Muhammad Kabir, Saeed Ahmed

Deep Learning Approach For Facial Age Recognition……..…….……..…953
Amgad Muneer, Rao Faizan Ali, Abdo Ali Al-Sharai

Design of a predictor for COVID-19 misinformation prediction……...……...…959
Muhammad Anzer Chughtai, Jun Hou, Huaqiu Long, Qianmu Li, Muhammad Ismail

A Fuzzy Expert System Design for Diagnosis of Prostate Cancer…….……..…969
Muhammad Sheharyar Liaqat, Ihtisham ul Haq, Faisal Riaz, Mubashar Hussain

Body-worn Hybrid-Sensors based Motion Patterns Detection via Bag-of-features and Fuzzy Logic Optimization…….…….…….…….…….…….…….…….…….…….…….…….975
Madiha Javeed, Ahmad Jalal

A Novel Deep Learning Model for Understanding Two-Person Interactions Using Depth Sensors…….....…982
Manahil Waheed, Madiha Javeed, Ahmad Jalal

Crowd Anomaly Detection in Public Surveillance via Spatio-temporal Descriptors and Zero-Shot Classifier……..…990
Faisal Abdullah, Madiha Javeed, Ahmad Jalal

Agent based Model for Zakat Distribution…….…….…998
Alisha Younas, Muzammil Hussain, Marrium Anam, Syed Waqar Jaffry

Green Awareness Rating Scale (GARS) Development to Extend TAM……....……1004
Sultana Ashiq

Internet of Things: Security Challenges and its Preclusion Methods…….……...……..……1010
Rabia Sajjad, Kamran Arshad

Intelligent Analytical String Search Algorithm…….…..……1017
Kamran Arshad

Comprehensive analysis of machine learning based predictors for identifying DNase I hypersensitive sites…….…….…….…….…….…….…….…….……1023
Muhammad Rashid Rasheed, Mehwish Gill, Muhammad Asif Subhani, Muhammad Arif, Saeed Ahmed, Muhammd Kabir

IoT Based Fish Stress Factor Monitoring System……..……..……..1029
Abdul Razzaq, Mohsin Raza, Fahad Saif, M. Salman Sajid, Naheed Bano, Ali Haider Khan

Rheumatoid Arthritis Genes Classification Using ML Classifiers……...…….….1035
Anam sana, Seher Ansar Khawaja, Muhammad Farooq

Blending Project Centric Approach With Gamification For Teaching Computing Courses…….....…..……1041
Muhammad Ishaq, Adnan Abid, Kamran Abid

Experience Report on Improving Software Engineering Education…….…….…..……1046
Affan Yasin, Rubia Fatima, Lin Liu, Ziqi Wei, Wang Jianmin