



INTERNATIONAL CONFERENCE

On

**“Emerging Trends In Innovative Computing &
Intelligent System” (IC-ETCIS-2021)**

Date: 16-18 November 2021

Organized By: Department of Computer Science and Electronics Christian
Eminent College Academy of Management, Professional
Education & Research, Indore



RFI Publication
International Book Publications

First Edition 2021

ISBN – “978-93-91903-31-2”

Price: 385 INR

Size: A4

Copyrights © 2021

All rights reserved.

Bibliographic Information:

Title:

Emerging Trends In Innovative Computing & Intelligent System (IC-ETCIS-2021)

Editor

Dr. Sourabh Jain

Publisher

RFI

Year - 2021



Publisher:

Publisher & Editor in Chief, RFI (registered under the government of India book Publication acts) India.

www.publication.rfiindia.com

Printing & Publisher Address:

RO-K185, Ground Floor Sarita Vihar, New Delhi 110076

HO-207, Jai Prakash Nagar, RFI Tower, JBP 482002

Acknowledgement



I would like to express my sincere gratitude to all the authors, researchers and reviewers, who provided their detail research and views for **(IC-ETCIS-2021)**.

I would like to thank my family, who supported and encouraged me in spite of all the time it took me away from them. This conference could see the light of day due to generous support from the WFST.

The readers and beneficiaries vary from academicians, professional engineers and scientists, to undergraduate and graduate students from all over the country.



TABLE OF CONTENTS

Reg. No.	Name	Title
IC-ETCIS-2021-101	Anushka Singh, Dr. Archana Durgesh	STATUS OF SPOKEN AND WRITTEN ENGLISH IN PRESENT SCENARIO
IC-ETCIS-2021-102	Dr. Nwobodo-Nzeribe, Nnenna Harmony, Eneh, Afam Samuel	ABSTRACT ON DEVELOPMENT OF AUTOMATED COSMOLOGICAL DRIVEN BLOOD PRESSURE MONITOR USING FINGER TIP
IC-ETCIS-2021-104	Marie Fernandes	A STUDY OF DEEP LEARNING METHODS
IC-ETCIS-2021-110	Dr. Ravindra Manerikar, Dr. NG Toshniwal, Dr. Abhay Chavan, Dr. Chaitra Mastud, Dr. Prajwalit Kende	EMERGING TRENDS IN COMPUTING AND INTELLIGENT SYSTEM IN THE FIELD OF ORTHODONTICS WITH CLEAR ALIGNER THERAPY
IC-ETCIS-2021-111	Shubhangi Gautam Dr. Pardeep Kumar	PROSPECT THEORY IN INVESTMENT DECISIONS
IC-ETCIS-2021-112	Ahsan Ul Haq	AN OVERVIEW OF THE DDC'S ELECTION IN JAMMU AND KASHMIR 2020
IC-ETCIS-2021-113	Prof. Moses .O. Onyesolu Ifeyinwa Nkemdilim Obiokafor	DESIGN AND DEVELOPMENT OF AN ENHANCED DISTANCE LEARNING SYSTEM
IC-ETCIS-2021-117	Dr. Amrit Singh Madahar	THE ROLE OF ARTIFICIAL INTELLIGENCE IN OUR REAL LIFE
IC-ETCIS-2021-118	Jay Kumar Pandey Dr. Vikas Kumar Aharwal	TO INCREASE EFFICIENCY OF SOLAR PANEL THROUGH DRIVING CIRCUIT
IC-ETCIS-2021-119	Dr. Caroline David	PERSPECTIVES ON THE RATE OF CUSTODIAN DEATH AND CRIME IN INDIA
IC-ETCIS-2021-120	Manoranjan Kumar Sinha	IMPLEMENTATION OF HIGH SPEED MODIFIED BOOTH MULTIPLIER FOR FIR FILTER DESIGN
IC-ETCIS-2021-121	Govind Singh Mahara, Dr. Sharad Gangele	A COMPREHENSIVE SURVEY OF SOCIAL NETWORK ANALYSIS- BASED ANOMALY DETECTION TECHNIQUES WITH SOFT COMPUTING
IC-ETCIS-2021-122	Somya Dubey	INTELLIGENT HEALTHCARE SECURITY MODEL FOR BIG DATA IN THE USING DEEP LEARNING APPROACH

IC-ETCIS-2021-127	Dr. Sanjay Singh Bhadoriya, Manohar Lal Raksha	DATA REPLICATION IN A DISTRIBUTED SYSTEM: A STUDY
IC-ETCIS-2021-128	Prof. Himanshu Dehariya, Prof. Rajesh Shah	VARIOUS PERSPECTIVES ABOUT CLOUD COMPUTING TECHNOLOGY
IC-ETCIS-2021-131	Mr. Mohit Kumar Varma	LANGUAGE DETECTION AT SENTENCE LEVEL IN INDIAN CODE- MIXED SOCIAL MEDIA TEXT

IC-ETCIS-2021-101**STATUS OF SPOKEN AND WRITTEN ENGLISH IN PRESENT SCENARIO****Anushka Singh**

Assistant Professor, R.R. Group of Institution

Dr. Archana Durgesh

Associate Professor, BBDU

Abstract- Language is a tool of communication. In big metropolis of India, it is really difficult to come across any educated person who can speak an Indian Language without the use of English words. Any language is given importance because of the language in which we can communicate on day to day basis. For educational purpose. For earning purpose. Important given to language in a society. Its importance is not just in how many people speak it but in what sense it is used for. It is quite interesting to note that India, a multilingual nation, is the third largest English speaking country after the US and UK.

Keywords: Tool of communication, metropolis, multilingual.

IC-ETCIS-2021-102**DEVELOPMENT OF AUTOMATED COSMOLOGICAL DRIVEN BLOOD PRESSURE MONITOR USING FINGER TIP****Dr. Nwobodo-Nzeribe, Nnenna Harmony**

Department of Computer Engineering, Coordinator, Biomedical Engineering Technology

Eneh, Afam Samuel

Department of Biomedical Engineering Technology, Enugu State University of Science and Technology

The research work, titled "Development of Automated Cosmological Driven Blood Pressure Monitor Using Finger Tip," is to produce a solar-powered finger-tip blood pressure monitor. The system will measure user's blood pressure via the fingertips and using solar power as energy source. This will enable its use in remote areas where there is lack of electricity. Using infrared light to monitor the pulse in the finger, the device is able to quantify systolic and diastolic blood pressure. Using the proto us 8 software, the system was designed and simulated. The microcontroller employed in its implementation was the ATMEG 328 in the Arduino programmed with the associated software. Following the development of the prototype was the testing which was proven satisfactorily. When compared to a conventional sphygmomanometer, the device outperforms the present digital device in terms of power stability and usage of cuff. In conclusion, a solar-powered finger-sensing sphygmomanometer was designed to eliminate the usage of a cuff and can be used in rural areas with epileptic power or no electricity.

IC-ETCIS-2021-104**A STUDY OF DEEP LEARNING METHODS****Marie Fernandes**

Research Scholar, Renaissance University, Indore

Abstract- In recent era and research studies, the deep learning apart from being a subpart of the most technological advance area of the machine learning that believes in learning from example for producing result with higher emphasis on accuracy same as human instinct.

Glaucoma is a silent and neuro-degenerative eye disease which is irreversible and is considered as the primary reason of vision loss. As per World Health Organization (WHO), glaucoma is affecting more than 65 million people in the world and so its early detection and treatment are far much more important so as to prevent vision loss. This eye disease has a major setback of optic nerve fibre loss that is due to increased intraocular pressure (IOP) or can be said in simple words that due to loss of blood flow to the optic nerve. It has been noted that IOP measurement is cannot be specific nor it is sensitive to be an effective

indicator or highly noted measured valued as it has been noted that visual damage can also occur even without increased IOP.

So, the early detection of glaucoma through machine learning, artificial intelligence application of deep learning is highly one of the computer aids available that can help ophthalmologists in this area. In this paper, we present study of the deep learning technique with different CNN architectures which can be used for glaucoma assessment.

Keywords: Glaucoma, machine learning, artificial intelligence, deep learning, convolution neural network.

IC-ETCIS-2021-110

EMERGING TRENDS IN COMPUTING AND INTELLIGENT SYSTEM IN THE FIELD OF ORTHODONTICS WITH CLEAR ALIGNER THERAPY

¹Dr. Ravindra Manerikar

¹Principal, Rural Dental College, Pravara Institute of Medical Sciences, Loni

²Dr. NG Toshniwal

²Professor and Head of Department, Department of Orthodontics and Dentofacial Orthopaedics, Rural Dental College, Pravara Institute of Medical Sciences, Loni

³Dr. Abhay Chavan

³Post Graduate Student, Department of Orthodontics and Dentofacial Orthopaedics, Rural Dental College, Pravara Institute of Medical Sciences, Loni

⁴Dr. Chaitra Mastud

⁴Professor, Department of Orthodontics, Dr. D. Y Patil Dental College and Hospital, Pimpri, Pune

⁵Dr. Prajwalit Kende

Professor, Department of Oral Surgery, GDCH, Mumbai

Abstract- The term Clear Aligner Therapy consists of a wide range of appliances and different models of action, methods of construction and applicability to various malocclusion treatments. All share the use of clear thermoformed plastic aligners that cover many of all the teeth, but from the common point, there are major and significant differences which affect the ability of any given system to treat a wide range of orthodontic problem. The development of Artificial intelligence and computing systems have greatly changed the perspective of Clear aligner treatment. As Clear aligner therapy aims at predictive tooth movements and eventually fabrication of Aligner trays for correction of a particular malocclusion. Artificial intelligence is used in prediction and fabrication of a treatment plan with Clear aligner therapy. Clear aligner therapy consists of thermoplastic trays which are customized for tooth movements and eventually provided by the orthodontists to the patient. Diagnosis and treatment planning yet remain the most important part of the Clear aligner therapy. In the first stage of Clear aligner therapy intraoral scanning is done for the patient. Intraoral scanner accurately scans the hard and soft tissue structures and replicated them in the form of Digital models which can be accurately used for fabrication of treatment plan for Clear aligners. Digital models are obtained through intraoral scanning and a tentative treatment plan is provided by the software to the orthodontists. The software provides the information regarding the placement of attachments over the tooth surface to facilitate movements of teeth. Also, the software provides the information regarding the progress of the treatment plan and the final changes which can be obtained with the Clear Aligner Therapy. The Orthodontists can make changes in the treatment plan as per his/her opinion regarding the malocclusion. Hence with the help of this newer trend in computing and intelligent system with the help of artificial intelligence the orthodontists can look into the future and can provide accurate and stable results for the patients.

IC-ETCIS-2021-111**PROSPECT THEORY IN INVESTMENT DECISIONS****Shubhangi Gautam**

Ph.D. Scholar, University School of Business, Chandigarh University, Mohali, India

Dr. Pardeep Kumar

Associate Professor, University School of Business, Chandigarh University, Mohali, India

Abstract- Recently, several publications have been published that address the role of prospect theory in investment decisions and its impact. Prospect Theory is one of the most vital ideas in finance, as it describes the majority of behavioral patterns. It describes how individual investors behave when confronted with probabilistic alternatives including some risk, even though the outcomes' probabilities are known. Investors should be aware of their biases, which show that losses have a bigger emotional impact over similar gains. The prospect theory attempts to understand how investors make decisions. Various applications of prospect theory have been discussed in this chapter to deeply understand the theory of prospects.

Keywords: Prospect Theory, Mental Accounting, Regret Aversion, Loss Aversion, Investment Decisions.

IC-ETCIS-2021-112**AN OVERVIEW OF THE DDC'S ELECTION IN JAMMU AND KASHMIR 2020****Ahsan Ul Haq**

Research Scholar, Lovely Professional University

Abstract- The abstract deals with the scenario of Panchayat Raj Institutions and overview of the DDC's election in Jammu Kashmir after the dissolution of the Article 370. The effort has been made to explore the historical background of the PRIs in Jammu and Kashmir. Its revitalization before as well as after the Article 370 dissolution. The abstract accommodates contents like financial aspects (economic conditions), administrative aspect, educational standard, Schedule Tribe status, Pahari people and comparative analysis of casteism. The objective of the abstract is to explore the historical background of Panchayati Raj Institutions in J&K with the reference of the process of democratic decentralization in rest of India and the constitutional status of the Panchayati Raj Institutions in Jammu and Kashmir. The present analysis is based on the exploratory research design that includes review of relevant literature related to the Panchayati Raj Institutions and DDC's election in 2020 in Jammu and Kashmir, experienced survey contains informal interaction with experienced persons and analysis of insight stimulating cases among a large population of the community under study. Secondary data from administrative records has been used. The Primary data has been collected by using interview scheduled comprised of items related to PRIs and election of the DDC's. In all, more than 1000 (one thousand) respondents constituting sample of the study have been interviewed. The Data has been analysed and interpreted on the basis of item analysis method. Conclusion has been drawn with the certain implications that the lack of Government Development Program, backwardness of the people, militancy, less awareness among the people regarding panchayat elections, less political participation, corruption it was the main reason of the failure of the Panchayati Raj Institutions in Jammu and Kashmir.

IC-ETCIS-2021-113**DESIGN AND DEVELOPMENT OF AN ENHANCED DISTANCE LEARNING SYSTEM****Prof. Moses .O. Onyesolu**

Professor, Department of Computer Science, Nnamdi Azikiwe University, Awka, Nigeria

Ifeyinwa Nkemdilim Obiokafor

Lecturer, Department of Computer Science Technology, Anambra State Polytechnic, Mgbakwu

Abstract- Learners' identification is a very important online distance learning issue. Users of National Open University of Nigeria learning platform seeks a more convenient approach

to address the third party login using the registered student's particulars, impersonation during course Tutor-Marked Assignments (TMAs), and identity theft in academic credit. This work developed and implemented an Enhanced Distance Learning (EDL) System that introduces the application of keystroke dynamic biometric system to identify and authenticate learners during course assessment. To achieve this, Object-Oriented Hypermedia Design Methodology (OOHDM) was adopted for the research methodology. The system was designed and implemented using Bootstrap JavaScript programming with MySQL server as the database management system (DBMS). The result of the system is an enhanced distance learning platform hosted in a local host. In the system, learners do not have to put in any extra effort in using the biometric, and they might not be aware that they are being monitored and secured by keystroke biometric. The system provides an additional security feature with low cost, and provides an easiest way to secure the online examination. It works without the knowledge of the user and provide security.

Keys: distance learning, learning management system, blended learning, online learning, keystroke dynamics, biometric and knowledge based authentication, identity theft, academic fraud, and academic impersonation.

IC-ETCIS-2021-117

THE ROLE OF ARTIFICIAL INTELLIGENCE IN OUR REAL LIFE

Dr. Amrit Singh Madahar

Head PG Department of Computer Science & IT Desh Bhagat College Bardwal Dhuri-
148024, Sangrur

Abstract- The aim of this paper is to introduce with Artificial Intelligence & Expert system. This paper includes the tools required while working with expert system and its real life applications. The applications of Expert System are endless, here I have tried to cover just introduction of few of them. The advantages & disadvantages are also covered to a small extent.

IC-ETCIS-2021-118

TO INCREASE EFFICIENCY OF SOLAR PANEL THROUGH DRIVING CIRCUIT

Jay Kumar Pandey

Research Scholar, Dr. A. P. J. Abdul Kalam University, Indore (M.P.) –INDIA

Dr. Vikas Kumar Aharwal

Assistant Professor, Dr. A. P. J. Abdul Kalam University, Indore (M.P.) –INDIA

Abstract- Solar photovoltaic (PV) energy has shown significant expansion on the installed capacity over the last years. Most of its power systems are installed on rooftops, integrated into buildings. Considering the fast development of PV plants, it has becoming even more critical to understand the performance and reliability of such systems. One of the most common problems faced in PV plants occurs when solar cells receive non-uniform irradiance or partially shaded. The consequences of shading generally are prevented by bypass diodes. A significant number of studies and technical reports have been published as of today, based on extensive experience from research and field feedbacks. However, such material has not been cataloged or analyzed from a perspective of the technological evolution of bypass diodes devices. This paper presents a comprehensive review and highlights recent advances, ongoing research, and prospects, as reported in the literature, on bypass diode application on photovoltaic modules. First, it outlines the shading erect and hotspot problem on PV modules. Following, it explains bypass diodes' working principle, as well as discusses how such devices can impact power output and PV modules' reliability. Then, it gives a thorough review of recently published research, as well as the state of the art in the field. In conclusion, it makes a discussion on the overview and challenges to bypass diode as a mitigation technique.

Keywords: Irradiance, bypass diodes, hotspot, mitigation technique

IC-ETCIS-2021-119**PERSPECTIVES ON THE RATE OF CUSTODIAN DEATH AND CRIME IN INDIA****Dr. Caroline David**

HOD of Economics & FC Department, DTSS College of Commerce,
Malad East, Ph.D. Guide at University of Mumbai

Abstract - "Detention torture is one of the most brutal forms of human rights violations. It is banned by the Indian Constitution, the Supreme Court, the National Human Rights Commission (NHRC) and the United Nations. But police across the country hate these institutions. Therefore, there is a need to strike a balance between individual human rights and social interests in order to combat crime using a realistic approach"

The arrival of custodial deaths and torture has reached Shige, according to a report by the National Campaign Against Torture, which states that in 2019 alone, 1,731 people died in custody and approximately 5 deaths each day of the year. This includes 1,606 deaths in judicial custody and a total of 117 deaths in police custody. The blatant abuse of law and authority by the police is not a curious topic as the police are generally expected to use violence to deal with crime, a fictitious estimate of police officers committed to using violence to disable criminals so that they can avoid further. Loss of innocent civilians, this assumption has led to serious violations of the code of conduct among the authorities, leading many to grossly violate their right to dominate the public. The 'Fast Justice' track, as shown by the police, destroys the pillars built to support social order and justice in our society, a civic power of the state that has the right to create order in society and the responsibility falls on the people themselves to impose vigilance and vigilance.

Keywords: Violence, crime fast justice' track, detention, torture.

IC-ETCIS-2021-120**IMPLEMENTATION OF HIGH SPEED MODIFIED BOOTH MULTIPLIER FOR FIR FILTER DESIGN****Manoranjan Kumar Sinha**

Research Scholar, Dept. of ECE, School of Engineering, SSSUTMS, M.P

Abstract- The most important criteria for the design and implementation of DSP processor is area optimization and reduction in power consumption. The fundamental block for the design and implementation of the DSP processor is the Finite Impulse Response Filter. The Finite Impulse Response (FIR) Filter consists of three basic modules which are adder blocks, flip flops and multiplier blocks. The performance of the FIR Filter is largely influenced by the multiplier, which is the slowest block out of all. In this paper, the Finite Impulse Response Filter has been proposed using two different multipliers namely Array multiplier and Booth Multiplier and both the proposed FIR filters have been compared for various parameters. The proposed filter was designed using Verilog HDL and implemented using the Xilinx 14.7ISE tool. Improvements have been achieved in both area and delay. The low power consumption and reduced delay and operating frequency of the cabin multiplier make it well suited for the development of FIR filters for low voltage and low power VLSI applications.

Keywords: Finite Impulse Response (FIR), Array Multiplier, Booth Multiplier.

IC-ETCIS-2021-121**A COMPREHENSIVE SURVEY OF SOCIAL NETWORK ANALYSIS-BASED ANOMALY DETECTION TECHNIQUES WITH SOFT COMPUTING****Govind Singh Mahara**

(Research scholar), Department of Computer Science& Application, RKDF University,
Bhopal, MP, India

Dr. Sharad Gangele

(Professor), Department of Computer Science & Application, RKDF University, Bhopal, MP,
India

Abstract - Online social networks have documented an extreme rise of interest in the last decade due to the evolution of the Internet. They have become main targets for malicious

users who attempted to perform illegitimate activities and cause damage to other users it has a great impact because of its fundamental features such as: Social Influences, Means of Communication, and Exploring Digital Social Space. The mass usage of Online Social Networks (OSNs) in different domains has given rise to critical threats such as vulnerabilities, mobile threats, etc. Moreover, there are massive anomalies. For instance; identity theft, hack account, fake account, spams and many other illegitimate activities, for this reason, there is a need for an approach to detect these anomalies. This paper presents a comprehensive survey of social network analysis-based anomaly detection techniques with soft computing technique.

Keywords: Social Networking, Social media, Social Networking Analysis, Anomaly Detection, Soft computing.

IC-ETCIS-2021-122

INTELLIGENT HEALTHCARE SECURITY MODEL FOR BIG DATA IN THE USING DEEP LEARNING APPROACH

Somya Dubey

Department of Computer Science & Engineering,
Dr. A. P. J. Abdul Kalam University, Indore

Abstract- Healthcare data is being increasingly digital, and the data acquired nowadays from all modern devices has reached a substantial volume around the world. Healthcare data must be safeguarded, and Patient Health Records (PHR) must be protected in the United States, the United Kingdom, and other European countries so that patients cannot be re-identified using only basic information. Healthcare privacy is an important component mandated by Healthcare Acts (e.g., HIPAA), and as a result, data must be protected from falling into the wrong hands or being breached by malevolent insiders.

Because of the growing threat of data breaches and leaks, as well as the increased adoption of cloud technologies, it's critical to secure existing healthcare big data systems. The current healthcare security picture in big data systems has been reviewed in this study, along with difficulties and security issues that need to be addressed. In this study, a deep learning technique is employed to calculate the security level for each sensitivity level. A neural network is utilized to make an informed choice regarding the security level based on a variety of patient features. The planned work's effectiveness and efficacy are confirmed through an experimental investigation.

Keywords: Big Data, Cloud, Healthcare, Security, Analytics, Deep Learning.

IC-ETCIS-2021-127

DATA REPLICATION IN A DISTRIBUTED SYSTEM: A STUDY

Dr. Sanjay Singh Bhadoriya

Dept. of Computer Science, Dr. APJ Abdul Kalam University-Indore

Manohar Lal Raksha

Research Scholar, Dr. APJ Abdul Kalam University-Indore

In this paper we investigate the performance issues of data replication in distributed database system, where a set of database servers are connected via a network. A database replication scheme, Replication with Divergence, which allows some degree of divergence between the primary and the secondary copies of the same data object, is compared to other two schemes that, respectively, dis-allows replication and maintains all replicated copies consistent at all times. The impact of some tunable factors, such as cache size and the update propagation probability, on the performance of Replication with Divergence is also investigated. These results shed light on the performance issues that were not addressed in previous studies on replication of distributed database systems.

Prof. Himanshu Dehariya

Asst. Professor, Christian Eminent College, Indore

Prof. Rajesh Shah

Professor, Christian Eminent College, Indore

Abstract- During the last several decades, dramatic advances in computing power, storage, and networking technology has allowed the human race to generate, process, and share increasing amounts of information in dramatically new ways.

As new applications of computing technology are developed and introduced, these applications are often used in ways that their designers never envisioned. New applications, in turn, lead to new demands for even more powerful computing infrastructure. To meet these computing-infrastructure demands, system designers are constantly looking for new system architectures and algorithms to process larger collections of data more quickly than is feasible with today's systems.

It is now possible to assemble very large, powerful systems consisting of many small, inexpensive commodity components because computers have become smaller and less expensive, disk drive capacity continues to increase, and networks have gotten faster. Such systems tend to be much less costly than a single, faster machine with comparable capabilities.

Building such systems from large numbers of commodity components leads to some significant challenges, recently, a number of commercial and academic organizations have built large systems from commodity computers, disks, and networks, and have created software to make this hardware easier to program and manage. These organizations have taken a variety of novel approaches to address the challenges outlined above. In some cases, these organizations have used their hardware and software to provide storage, computational, and data management services to their own internal users, or to provide these services to external customers for a fee. We refer to the hardware and software environment that implements this service-based environment as a cloud computing environment.

Regardless of the exact definition used, numerous companies and research organizations are applying cloud computing concepts to their business or research problems including Google, Amazon, Yahoo, and numerous universities. This research paper provides an overview of some of the most popular cloud computing services and architectures in use today. We also describe potential applications for cloud computing and conclude by discussing areas for further research.

Keywords: Commodity Components, Service based Environment, System Architecture.

Mr. Mohit Kumar Varma

Lecturer, School of Computer Science & IT, Devi Ahilya Vishwavidyalaya, Indore (M.P.)

Abstract- Citizens are more likely to participate in conversations on numerous topics, and people voice their opinions on social media, thanks to social media's meteoric rise. Code-mixing is a popular way for people to express themselves on social networking platforms. Language detection at the document level has been considered nearly solved in some application areas, but language detectors fail in the social media context due to phenomena such as utterance internal code-switching, lexical borrowings, and phonetic typing, all of which imply that language identification in social media must be done at the word level or sentence level. Text sentiment analysis techniques usually work at a certain level, such as phrase/word, sentence, or document level. The goal of this work is to examine a solution for sentiment classification at a finer level, namely the sentence level, where the polarity of the sentence can be classified into three main categories: positive, negative, and neutral.