

Papers published by the faculty members during 2023-24

Name	Designation	Paper Title	Journal	Date of Publication	Volume	ISSN	Impact Factor	Remarks
Dr. Joginder Singh	Associate Professor	शशि वसिष्ठ एवं वैदिक ऋषियों में उनका स्थान	Madhya Bharti-Humanities and Social Sciences	Jun-23	Vol 83 No 4	0974-0066	6.1	UGC Care Approved, Peer Reviewed and Refereed Journal
2 Dr. Joginder Singh	Associate Professor	वैदिक ऋषी वसिष्ठ द्वारा स्तुत देवता	Kanpur Philosophers: International Journal of humanities, Law and Social Sciences	Mar-23	Vol. X, Issue 1(D)	2,348-8301	5.86	UGC Care Approved, Group I, Peer Reviewed and Refereed Journal by New Archaeological & Cienological Society Kanpur India
3 Sh. Karambir Singh	Associate Professor	सामाजिक उत्थान में वैदिक साहित्य का योगदान	शिवशेखरानन्द वैदिक शोध संस्थान, सायु अश्रम, हौशयारपुर - 146021 (पंजाब, भारत)	Dec-23	72 वां वर्ष, अंक 9	0505-7523	-	Peer Reviewed Journal
4 Dr. Banta Singh Jangra	Assistant Professor	Cyber Security Ethics for Modern Users	ALASRA	Apr-24	Vol 13, Issue 4	2278-3741	7.448	UGC Care Group 1 (Peer Reviewed Refereed Journal)
5 Sh. Anil Kumar	Assistant Professor	The Current Trend of 5G in Web 3.0 for Connectivity & Innocation:	The Maharaja Sayajirao University of Baroda	Feb-24	Vol 58, Issue 1	0025-0422	-	UGC Care Group 1 Journal
6 Dr. Sunan Malik	Assistant Professor	Impact of Technology on Human Life	Leadership, Education, Personality: An Interdisciplinary Journal	Oct-23	Vol 18, Issue 10	2524-6178	7.621	UGC Care Group 1 Journal, Peer Reviewed, Refereed
7 Dr. Anju Jain	Assistant Professor	Self-adaptive credit-based framework for blockchain-based IoT (BIoT)	Journal of autonomous Intelligence	Dec-23	Vol 7, Issue 2	2630-5046	-	Peer Reviewed Journal, Scopus
8 Mrs. Uma Sharma	Assistant Professor	Cyber Security Ethics for Modern Users	Ajasta	Apr-24	Vol 13, Issue 4	2278-3741	7.448	UGC Care Group 1 (Peer Reviewed Refereed Journal)
9 Mrs. Uma Sharma	Assistant Professor	Mobile App Testing Techniques, Environment and Challenges	Paripex-Indian Journal of Research	Apr-24	Vol 13, Issue 4	2250-1991	-	Peer Reviewed, Refereed, Refereed & Indexed International Journal

Books published by the faculty members during 2023-24

Name	Designation	Book Title	Affiliating Institution	ISBN
1 Sh. Joginder Singh	Associate Professor	गीता एक जीवन दर्शन	AIRO Publication	978-93-5906-452-9
2 Dr. Banta Singh Jangra	Assistant Professor	Introduction to Information Technology	Kapila Publications Jalandhar-Delhi	978-93095882-55-2
3 Dr. Suman Malik	Assistant Professor	IoT and Society: Recent Trends and Future Directions	Door Publication Delhi	978-81-963250-5-3

Chapters in Books published by the faculty members during 2023-24

Name	Designation	Chapter Title	Book Title	ISBN
1 Dr. Banta Singh Jangra	Assistant Professor	Use of ICT in Teaching Learning Pedagogy	INDIA@75 Research and Development	978-93-5747-321-7
2 Sh. Anil Kumar	Assistant Professor	The Role of 5G in Web 3.0:Enabling a New Era of Connectivity and Innovation	IoT and Society: Recent Trends and Future Directions	978-81-963250-5-3
3 Dr. Suman Malik	Assistant Professor	Security Challenges in Internet of Things	IoT and Society: Recent Trends and Future Directions	978-81-963250-5-3
4 Ms. Priyanka	Assistant Professor	IoT Impacting Privacy and Security	IoT and Society: Recent Trends and Future Directions	978-81-963250-5-3

Number of publications-referred & indexed journals/SCI/Scopus:

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1 Dr. Joginder Singh	Associate Professor	ऋषि वसिष्ठ एवं वैदिक ऋषियों में उनका स्थान	Madhya Bharti-Humanities and Social Sciences	Jun-23	Vol 83 No 4	0974-0066	6.1	UGC Care Approved, Peer Reviewed and Referred Journal
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3 Sh. Karanbir Singh	Associate Profecesor	सामाजिक उत्थान में वैदिक साहित्य का योगदान	विश्वेश्वरानन्द वैदिक शोध संस्थान, साधु आश्रम, होशियारपुर - 146021 (पंजाब, भारत)	Dec-23	72 वा वर्ष, अंक 9	0505-7523	-	Peer Reviewed Journal
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Certificate of Publication

This is to certify that

जोगिन्द्र सिंह
एसोसिएट प्रोफ़ेसर संस्कृत, राजकीय महाविद्यालय, हांसी

For the paper entitled

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ऋषि वसिष्ठ एवं वैदिक ऋषियों में उनका स्थान

जोगिन्द्र सिंह

एसोसिएट प्रोफ़ेसर संस्कृत, राजकीय महाविद्यालय, हांसी

वसिष्ठ शब्द की व्युत्पत्ति एवं अर्थ:

‘वसिष्ठ’ पद श्रेष्ठ कर्मों को उत्पन्न करने वाली ‘वस्’ धातु से व्युत्पन्न हुआ माना जाता है।¹ वस् निवासे धातु से तृच को इष्टन् प्रत्यय करने पर और तृच प्रत्यय का लोप करने पर ‘वसिष्ठ’ पद की व्युत्पत्ति हुई है।² वसु शब्द से इष्टन् प्रत्यय करने पर भी वसिष्ठ पद की निष्पत्ति मानी जाती है।³ संहिता एवं ब्राह्मण-ग्रन्थों से वसिष्ठ पद से श्रेष्ठ, प्राण, वाणी आदि अर्थ लिये गए हैं। एक अन्य निरुक्ति से तात्पर्य है कि वसिष्ठ ही वरिष्ठ (श्रेष्ठ) है। श्रेष्ठत्व और वासत्व के कारण ही उसे वसिष्ठ कहा जाता है।⁴

उपर्युक्त व्युत्पत्तियों के आधार पर ‘वसिष्ठ’ पद के श्रेष्ठ कर्म करने वाला, वरिष्ठ, सबको निवास प्रदान कराने वाला, अत्यन्त वसुमान् एवं धनी आदि अर्थ बनते हैं।

वसिष्ठ ऋषि का परिचय एवं वैदिक ऋषियों में उनका स्थान :-

ऋग्वेद के एक मन्त्र के अनुसार उर्वशी नामक अप्सरा से वसिष्ठ की उत्पत्ति हुई।⁵ इसी मन्त्र में मैत्रावरुण को वसिष्ठ का जनक कहा गया है -

“उतासि मैत्रावरुणो वसिष्ठोर्वश्या।⁶ वसिष्ठ को मित्र एवं वरुण के अर्थ से मैत्रावरुण अथवा मैत्रावरुणि कहा गया है। ऋषि वसिष्ठ का नाम सप्तऋषियों में गिना जाता है, ये सात ऋषि हैं भृगु, अत्रि, अङ्गिरा, कश्यप, गौतम, अगस्त्य और वसिष्ठ।⁷ ऋग्वेद के लगभग 108 सूक्तों के द्रष्टा सवि ऋषि हैं, इनमें अग्नि, इन्द्र, वायु उषा, सूर्य, आदित्य आदि देवताओं की स्तुति की गई है। यजुर्वेद में भी वसिष्ठ द्वारा दृष्ट अनेक मन्त्र हैं।⁸

1. वृहदे. 5.15.6 - नाम का जन्म निवास के गुण, सर्वोत्तम कार्य से हुआ।
2. वै. को, पृ.835
3. वै. को, पृ.835
4. द्र.श., भाग,4 - वरिष्ठोऽस्मि वसोः वासगृहेष्वपि। वरिष्ठ त्वाच्च वासाच्या वसिष्ठ इति विद्धि माम्।
5. ऋ., 7.3.12-यमेन ततं परिधि वयिष्यन् नप्सरसः परिजज्ञे वरिष्ठः।
6. ऋ., 7.33.11
7. वही: 10.63.7-समिद्धाग्निर्मनसा सप्तहोतृभिः।
8. यजु., 5.16.7.7.8.54.9.16.9.18

वसिष्ठ की दो पत्नियां, उर्जा और अरुन्धती।¹ उर्जा दक्ष प्रजापति की कन्या थी अरुन्धती कर्दम प्रजापति की नौ कन्याओं में आठवीं कन्या थी² वसिष्ठ के सबसे बड़े पुत्र का नाम शक्ति था।³ वसिष्ठ को परमेष्ठी भी कहा जाता है।⁴ सूर्य के समान तेजस्वी और ऋषियों में श्रेष्ठ कहा गया है।⁵

वसिष्ठ को मनुष्यों और मुनियों में श्रेष्ठ और धर्मात्मा बताया गया है।⁶ वसिष्ठ को ब्राह्मणों का स्वामी माना गया है।⁷ वसिष्ठ को इन्द्रियों को वश में रखने वाला कहा गया है इन्द्रियाणां वशकरो वसिष्ठः।⁸ वसिष्ठ को ब्रह्मचर्य व्रत का पालन करने वाला⁹ महात्मा¹⁰ और भगवान् कहा गया है।¹¹ वसिष्ठ को ब्राह्मणों में उत्तम माना गया है।¹² वसिष्ठ को अध्यात्मविद्या को जानने वाला और महातेजस्वी बताया गया है।¹³ ऋषि वसिष्ठ ने भगवान् विष्णु की स्तुति करके तपस्या के सहारे सिद्धि प्राप्त की।¹⁴ ऋषि वसिष्ठ का नाम मनु सप्तसोम, अथर्वा, वृहस्पति, भृगु, दक्ष, कश्यप आदि के साथ भी आता है।¹⁵ वसिष्ठ को आपव भी कहा गया है, आपव-वसिष्ठ का



Kanpur Philosophers

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वैदिक ऋशि.वसिष्ठ द्वारा स्तुत देवता

Authored By

जोगिन्द्र सिंह

एसोसिएट प्रोफ़ेसर संस्कृत, राजकीय महाविद्यालय, हांसी

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2



वैदिक ऋशि.वसिष्ठ द्वारा स्तुत देवता

जोगिन्द्र सिंह

एसोसिएट प्रोफ़ेसर संस्कृत
राजकीय महाविद्यालय, हांसी

33 देवता माने गए हैं, आठ वसु, एकादश रुद्र, द्वादश आदित्य, इन्द्र और प्रजापति¹ इस प्रकार कुल मिलाकर 33 देवता माने गए हैं :-

इति स्तुतासो असथा रिषदसो ये स्थ।

त्रयष्व त्रिंष्व मनोर्देवा यज्ञियासः॥²

निरुक्त में यास्क ने देवताओं का तीन प्रकार का वर्गीकरण

किया है।³

- 1- पृथ्वी-स्थानीय
- 2- अन्तरिक्ष-स्थानीय
- 3- द्युलोक-स्थानीय

पृथ्वी-स्थानीय देव - अग्नि, बृहस्पति, सोम, सरस्वती आदि।
अन्तरिक्ष-स्थानीय - इन्द्र, अपां नपात्, मातरिष्वन्, वायु, पर्जन्य, आपः, रुद्र,

मरुत् या मरुद्गण।

द्युस्थानीय - द्युस्थानीय देवों में वरुण, मित्र, आदित्य, सूर्य, सविता,

पूषा, विश्व, अश्विनौ, उषा देवी, चन्द्रमा

आदि।

परिचय :

वसिष्ठ ऋशि द्वारा अथर्ववेद में पृथ्वीस्थानीय, अन्तरिक्ष-स्थानीय, द्युस्थानीय आदि तीनों प्रकार के देवता स्तुत्य रहे, उनमें प्रमुख देवता इन्द्र है। वसिष्ठ-दृष्ट अथर्ववेदीय सूक्तों के अधिकांश मन्त्रों में इन्द्र देवता की स्तुति की गई है। पृथ्वी-स्थानीय-देवताओं में अग्नि, बृहस्पति, सोम, सरस्वती आदि देवता स्तुत हैं। अन्तरिक्ष-स्थानीय देवों में इन्द्र, वायु, मरुत् आदि और द्युस्थानीय देवताओं में वरुण, सूर्य, सविता, पूषा, विश्व, उषा देवी आदि देवता स्तुत्य रहे। ऋशि वसिष्ठ-दृष्ट

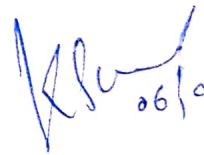
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Signature of Teacher Karambinder Singh Sihay
Associate Professor of SKT.

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3

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साधु आश्रम, होशियारपुर-146021 (पंजाब, भारत)

विषय-सूची

लेखक	विषय	विधा	पृष्ठांक
स्व. साध्वी सुरभि महाराज	पुण्य-पाप तथा विपाकसूत्र	लेख	७
श्री कर्मबीर सिंह सिहाग	सामाजिक उत्थान में वैदिक साहित्य का योगदान	लेख	१२
डॉ. संजीव कुमार	संत कबीरदास की भक्ति-भावना	लेख	१६
डॉ. रघुबीर सिंह बोकन	हिन्दी की सांस्कृतिक विरासत	लेख	२१
डॉ. सज्जय कुमार	लहरीदशकम् और सामाजिक सन्दर्भ	लेख	२७
सुश्री स्नेह लता	प्रभु श्रीराम की अयोध्या-रामचरितमानस में	लेख	३५
श्री संदीप कुमार शर्मा	वर्तमान समय में मूल्यशिक्षा की आवश्यकता	लेख	४०
श्री सीताराम गुप्ता	आत्मघाती है पर संपदा अथवा प्रकृति विनाश करना	लेख	४४
श्री कृष्ण कुमार 'कनक'	फिर जाते तो अच्छा था	कविता	४७
श्री कृष्णचन्द्र टवाणी	कैसी दिवाली है ?	कविता	४८
	पुस्तक-समीक्षा		४९
	संस्थान-समाचार		५०
	पुण्य-पृष्ठ		५१-५४

सामाजिक उत्थान में वैदिक साहित्य का योगदान

- कर्मबीर सिंह सिहाग

'वेद' आधिभौतिक, आधिदैविक एवं आध्यात्मिक ज्ञानराशि के अक्षय आकर ग्रन्थ हैं। वे हमारी सभ्यता, संस्कृति, धर्म, दर्शन, कला आदि सभी तत्वों को अपने अन्दर समाहित किए हुए हैं। वैदिक उपदेश समाज का सुख, शांति उत्साहयुक्त एवं प्रसन्नतापूर्वक जीवन जीने के लिए प्रेरित करते हैं। वे धर्म-अर्थ-काम एवं मोक्ष के प्रतिपादक कहे गये हैं। भगवान् मनु 'वेद' को सम्पूर्ण धर्म तत्त्व का मूल मानते हैं। वेदऽखिलो धर्ममूलम्। वेद प्रत्येक प्राणी के लिए सत्य के मार्ग का प्रकाशन करता है। इसलिए वेद का स्पष्ट आदेश है- मनुर्भव' अर्थात् मनुष्य बनो। प्रत्येक व्यक्ति सच्चा इंसान बनने पर ही समाज एवं राष्ट्र का विकास एवं कल्याण कर सकता है। मनुष्य समाज की वह इकाई है जिसकी उन्नति अवनति, उत्कर्ष-अपकर्ष से समाज की प्रगति निर्धारित होती है। मानवता एक उदात्त भावना है। इसमें स्वार्थ एवं संकीर्णता का कोई स्थान नहीं है। भारतीय ऋषियों की यह उद्घोषणा विश्व के समस्त मानव समाज के लिए थी कि पृथ्वी के समस्त मानव सुखी हों- सर्वे भवन्तु सुखिनः सर्वे सन्तु निरामयाः। सर्वे भद्राणि पश्यन्तु मा कश्चिद्दुःख भाग् भवेत्।

वर्तमान में राष्ट्रीय-एकता का अभाव दिखाई दे रहा है। परञ्च ऋग्वेद में राष्ट्र की एकता एवम् अखण्डता के संरक्षण के लिए मनुष्य मात्र को प्रेरणा देते हुए कहा गया है कि-

संगच्छध्वं संवदध्वं सं वो मनांसि जानताम्।

देवा भागं यथा पूर्वे संजानाना उपासते ॥'

इतना ही नहीं अपितु राष्ट्र की रक्षा के लिए तथा स्वकल्याण के लिए परस्पर विरोध का परित्याग करके सूत्रबद्ध होना आवश्यक है। समाज एवं राष्ट्र के सर्वांगीण विकास के लिए सामञ्जस्य अति आवश्यक है। इस प्रकार के संकेत वेद में स्थान-स्थान पर दिखलाई पड़ते हैं- समानी व आकूतिः समाना हृदयानि वः।

समानमस्तु वो मनो यथा नः सुसहासति ॥'

वेद का कथन है कि दृश्य जगत् के प्रत्येक पदार्थ में ईश्वर की सत्ता है। इसलिए भोग्य-पदार्थों के प्रति अत्यधिक आसक्ति नहीं होनी चाहिए अपितु त्यागभाव से उनका उपभोग करना चाहिए, इस प्रकार के आचरण से ही वास्तविक सुख एवं शान्ति की प्राप्ति हो सकती है।

ईशावास्यमिदं सर्वं यत्किञ्च जगत्यां जगत्।

तेन त्यक्तेन भुञ्जीथाः मा गृधः कस्यस्विद् धनम् ॥'

वस्तुतः वैदिक धर्म मानव मात्र के कल्याण

हेतु है। आचार्य मनु ने अपने राजा मनुस्मृत में सर्वज्ञानमयो हि सः कहकर वेद की वैदिकता एवं सर्वज्ञानमयता का प्रतिपादन किया है। यदि हम वैदिक-उपदेशों को अपने आचरण का विषय बनाएँ तो समाज एक आदर्श समाज बन सकता है। तैत्तिरीय उपनिषद् शिक्षावर्ण में प्रयुक्त 'सत्यं वद, धर्मं चर स्वाध्यायान्मा प्रमदः' दीक्षान्त भाषण के अवसर पर दिया जान वाला अत्यन्त महत्त्वपूर्ण जीवनोपयोगी उपदेश है, जिसकी आवश्यकता भौतिकता से ग्रस्त मानवमात्र के कल्याण के लिए परम आवश्यक है। मातृ देवो भव, पितृ देवो भव, अतिथि देवो भव इत्यादि वेद वचनों के माध्यम से माता-पिता, आचार्य, अतिथि आदि के देवत्व की उच्च भावना प्रतिपादित करके वैदिक संस्कृति ने विश्व की संस्कृतियों में उच्चतम स्थान बना लिया है। वैश्वीकरण के इस युग में भी हम एक दूसरे के हृदयों को पारस्परिक सहयोग के अभाव में जोड़ सकने में समर्थ नहीं हो पा रहे हैं, जबकि इस वैश्वीकरण की कामना वैदिक ऋषियों ने "यत्र विश्वं भवत्येकनीडम्" अर्थात् जहाँ सारा संसार एक घोंसला बन जाए, कहकर बहुत पहले की कर दी थी। वैदिक मन्त्र मानव से सहयोग की भावना रखते हुए 'वसुधैव कुटुम्बकम्' की भावना को सार्थकता प्रदान करते हैं। आज समस्त विश्व की एकमात्र समस्या यही है कि हमारा मन एवं दृष्टि इतने संकुचित हो गए हैं कि हम अधिकांश परिस्थितियों में अहंकार की भावना से

युक्त हो गए हैं जबकि प्राचीन ऋषियों का उद्देश्य था।

अयं निजः परो वेति गणना लघुचेतसाम्।

उदारचरितानां तु वसुधैव कुटुम्बकम्॥

ऋषियों की इस राष्ट्रीय-भावना को हम गाँधी जी के इन शब्दों में भी अनुभव कर सकते हैं जहाँ वे कहते हैं कि मैं किसी भी योजना को तभी सफल व सही समझूँगा, जब उसके अपनाने से पंक्ति में खड़ा अन्तिम व्यक्ति भी लाभान्वित हो सकता है। वेद में सबके विचार, सबके हृदय सबके मन और सबका खाना-पीना समान होने की कामना की गई है, जिससे समाज सुखपूर्वक रहता हुआ अपना जीवन व्यतीत कर सके -
समानी व आकृतिः समाना हृदयानि वः
समानमस्तु वो मनो यथा व सुसहासति॥

वैदिक ऋषि की दृष्टि इतनी उदार है कि वह सभी वस्तुओं पर सभी का समान अधिकार समझती है। अतः आरक्षण की आवश्यकता न समझकर सभी के लिए एक ही पानीयशाला एवं भोजनशाला की कामना करती हुई दिखाई देती है।

समानी प्रपासह वो जगभागः

समाने योक्त्रे स्य वो युनज्मि।

वेद की शिक्षाएँ सार्वभौम हैं। वेद में ऋषियों ने मानव के कल्याण के लिए कामना की है कि हम अविनाश और कल्याणप्रद मार्ग पर चलें, जिस प्रकार सूर्य और चन्द्रमा चिरकाल से बिना

किसी का आश्रय लिए राक्षसादि दुष्टों से रहित पथ का अनुसरण कर अभिमत मार्ग पर चल रहे हैं। उसी प्रकार हम भी परस्पर स्नेह के साथ शास्त्रोपदिष्ट अभिभूत मार्ग पर चले। 'स्वस्ति पन्थामनुचरेम'"" शतपथ ब्राह्मण में भक्त की ईश्वर से प्रार्थना है कि- हे प्रभु! मुझे बुराई से अच्छाई की ओर, अन्धकार से प्रकाश की ओर तथा मृत्यु से अमरत्व की ओर ले चलो- असतो मा सद्गमय, तमसो मा ज्योतिर्गमय, मृत्योर्माऽमृतं गमय।"

एक अन्य स्थल पर प्रार्थना की गई है कि मेरा मन उत्तम संकल्प वाला हो- तन्मे मनः शिवसङ्कल्पमस्तु।"

वर्तमान समय में विद्यालयों, महाविद्यालयों एवं विश्वविद्यालयों में विद्यार्थियों के मध्य गुरुजनों के प्रति बढ़ती अनादर की भावना के निवारण के लिए वैदिक मूल्यों की अत्यन्त आवश्यकता है, जहाँ पर कहा गया है कि ज्ञान प्राप्ति हेतु श्रद्धा का होना परम आवश्यक है। अनादरभाव से युक्त शिष्य को दी हुई शिक्षा दोष को ही उत्पन्न करने वाली होती है। ऋग्वेद में वर्णित प्रियं श्रद्धे ददत्तः श्रद्धया विन्दते वसु, श्रद्धे श्रद्धापयेह नः"" आदि कथन श्रद्धा के महत्त्व को दर्शाते हैं। गीता में भी कहा गया है, - श्रद्धावान् लभते ज्ञानम्"" किन्तु वर्तमान समय में व्यक्ति में सत्य, अहिंसा, त्याग, तपस्या, दान, मैत्री, सहयोग, परोपकार, समानता आदि गुणों का क्षरण होता

जा रहा है। इन मानवीय गुणों के संरक्षण हेतु वेद का अध्ययन अत्यन्त सहायक सिद्ध हो सकता है। सत्य समाज का आधार है। अथर्ववेद में सत्य को धर्म कहा गया है।" उपनिषदों में प्राप्त सत्यमेव जयते नानृतम्"" आदि कथन सत्यनिष्ठा पर बल देते हैं। ऋग्वेद में विश्व का नियन्त्रक एवं संचालक सत्य को माना गया है।" मन, वचन और कर्म से सभी प्राणियों के साथ द्रोह का अभाव अहिंसा है। ऋग्वेद में इन्द्रदेव से कामना की गई है कि हम अहिंसक होकर जीवन में पुरुषार्थ द्वारा लक्ष्य प्राप्ति करें।" हम हिंसारहित धन"" एवं हिंसारहित बुद्धि"" प्राप्त करें। व्यक्तिगत जीवन में अहिंसा का भाव दृढ़ होने पर ही मानव परिवार, समाज एवं राष्ट्र में अहिंसा का भाव स्थापित करने में समर्थ हो कसता है। संयमी और दयालु व्यक्ति ही अहिंसा के पात्र हैं। मैत्री की भावना व्यक्ति में उदारता उत्पन्न करती है। वेद में सभी प्राणियों को मित्रवत् देखने की कामना की गई है। ऋग्वेद में कहा गया है कि जो मित्र की सहायता नहीं करता है, वह मित्र नहीं है जो उचित समय पर मित्र की रक्षा एवं सहायता नहीं करता, वह व्यक्ति परित्याग के योग्य है।" अथर्ववेद में अचेतन में भी मैत्री भावना की कामना करते हुए कहा गया है- सर्वा आशा मम मित्रं भवन्तु।" अर्थात् सभी दिशाएँ मेरी मित्र हो। यजुर्वेद में कहा गया है कि सब प्राणी मुझे मित्र की दृष्टि से देखें और मैं

सभी प्राणियों का मित्र बन देंगे।

अतः आज समाज में जोड़ने से बच रही ईर्ष्या, द्वेष, घृणा, वैतन्य इत्यादि को भावन को तभी समाप्त किया जा सकता है यदि हम जगो मात्र के प्रति दया एवं करुण के भाव अपने हृदय में रखेंगे। दया को धर्म का मूल कहा जाना है। उपनिषदों में प्रजापति द्वारा उपदेश दिया गया है, कि दया करो दयध्वम्।

अतः निष्कर्ष रूप से कहा जा सकता है कि- वेद ज्ञान के अनुपम भण्डार हैं। आज संस्कृति अति बलवती हो रही है। आज

जनसामान्य भौतिक रूप से वैश्विक स्तर पर प्रगति कर रहा है, परन्तु मानवीय मूल्य कहीं पीछे छूटते जा रहे हैं। आज तो स्वार्थपूर्ति हेतु मिथ्या भाषण, छल-कपट, ईर्ष्या, द्वेष एवं दूसरे के अधिकारों का हनन करना ही व्यक्ति की प्रवृत्ति बनती जा रही है। ऐसे स्थिति में वेद का अध्ययन एवं शिक्षाएँ मानवता के संरक्षण एवं संवर्धन में अत्यन्त सहायक सिद्ध हो सकती है। वेद ज्ञान के मानसरोवर हैं, जहाँ से ज्ञान की विमलधाराएँ विभिन्न मार्गों से बहती हुई भारत को ही नहीं अपितु समस्त विश्व को उबार बनाने में सक्षम है।

१. मनुस्मृति, २.६	२. ऋग्वेद, १०.५३.६	३. वही, १०.१९१.२
४. वही, १०.१९१.४	५. यजुर्वेद ४०.१	६. मनुस्मृति, २.७
७. अथर्ववेद, २.२.१	८. यजुर्वेद ५.३७	९. ऋग्वेद, १०.१९१.४
१०. अथर्ववेद, ३.३०.६	११. ऋग्वेद ५.१५.५१	१२. शतसंहिता, १४.१.१.३०
१३. यजुर्वेद, ३४.१	१३. ऋग्वेद, १०.१५१.१-५	१५. मोक्ष, ६.३९
१६. अथर्ववेद, ५.१.२	१४. मुण्डकोपनिषद्, ३.१.६	१६. ऋग्वेद, १०.३७.२
१९. वही, ७.२०.८	१५. वही ६.२२.१०	१७. वही ७.६७.५
२२. वही, १०.११७.४	१६. अथर्ववेद १९.१५.६	१८. यजुर्वेद ३९.१८
२५. बृहदारण्यकोपनिषद्, ५.२.१-३		

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Abstract

In this paper we analyse about today's time issue, challenges and ethics regarding cyber security which plays an important role in the field of information and communication technology. Now the days 90% public using IT equipments like smart phone and using free internet services. Securing the personal information has become one of the biggest challenges in the present day for all users. Cyber Security accepts a vigorous role in the area of information and communication technology. The cyber security the main thing that originates in mind is 'cyber crimes' which are aggregate colossally daily. Now the days all governments and private organizations are taking numerous measures to keep these cyber wrong doings for their users. The significant trends of cyber security and the consequence of cyber security discuss in it. The cyber-terrorism could make associations lose billions of dollars in the region of organizations.

1. Introduction:

Cyber security is a major issue and headache for each and every users and it is the practice of protecting computers, networks, devices, software's from digital attack by unauthorised access. Those cyber attacks are usually aimed at accessing, changing, or destroying sensitive information in the system and data and extorting money from users via ransomware. An effective cyber security method has numerous layers of defense spread across the networks, computers, programs, or information's that one aims to keep non-toxic. In a society, the processes, the people and tools must all accompany one alternative to generate a real defense on or after cyber-attacks. Unified threat management systems can mechanism additions across select Cisco Security goods and speed up key security processes functions: discovery, examination, and remediation.

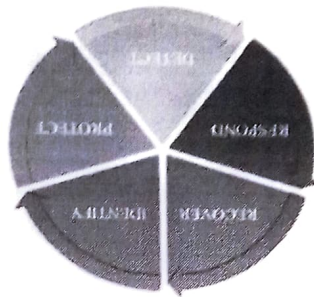


Figure-1: Cyber Security Life Cycle



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The Current Trend of 5G in Web 3.0 for Connectivity & Innovation: A Review

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Abstract

The World Wide Web and the internet have been pivotal in facilitating global sharing of ideas, information, and resources over the past few decades. Recent advancements in network technology have further bolstered this trend, revolutionizing not only the IT sector but also enhancing people's professional lives. The advent of technologies like 5G and Web 3.0, often referred to as the semantic web, has completely transformed internet access and engagement, leading to rapid changes in information dissemination and user interaction. The evolution from web 1.0 to web 3.0 and the progression of network technology from 1G to 5G have resulted in the development of numerous intelligent and context-aware applications across various sectors such as education, healthcare, transportation, IoT, agriculture, and energy. While 5G offers high speeds, low latency, and widespread device connectivity, challenges remain regarding web 3.0 integration, privacy, security, and cost. This study explores the advantages and disadvantages of 5G as a frontier for innovation and connectivity, enabling web 3.0 to expand its reach across various domains.

Keywords: Web 3.0, 5G, IoT, Network Security, Semantic Web, High Speed Internet.

Introduction

The emergence of 5G technology is poised to bring about a revolutionary shift, introducing new applications and services that were previously unimaginable. This advancement is set to completely transform every industry, from IT, IoT, and healthcare to transportation, agriculture, and beyond, offering high speeds, low latency, and extensive device connectivity. [1, 2]. Web 3.0 possesses the capability to analyze and synthesize the syntax and semantics of data, providing users with a more intricate and tailored experience [3]. This next iteration of the internet is characterized by its decentralized structure, placing a greater emphasis on security and

privacy while also enabling a more engaging and dynamic user experience. It presents a futuristic vision of the internet evolving into a more intelligent, user-friendly, and seamless platform, offering consumers a more customized experience. The combination of Web 3.0 and 5G is expected to significantly enhance the efficiency of processing vast amounts of data in real-time [4,5]. To enhance online privacy and security, 5G provides improved network security and privacy features. These technologies show great promise and are expected to drive the development of apps that operate more intelligently, automatically communicating with users and other devices. Due to their low latency, high security and privacy standards, and extensive connectivity, these technologies have revolutionized various fields, including education, healthcare, transportation, and development operations. [7, 9, 10]

However, integrating 5G with Web 3.0 presents certain complications, particularly regarding accessibility. The cost of establishing 5G infrastructure is one of the major challenges for some businesses and governments in adopting these technologies. Additionally, there are concerns in society about potential health risks associated with 5G technologies, which are not widely accepted. [8,10]

5G's Potential

The transition to 5G has not only accelerated device connectivity but has also introduced new utility areas that have already begun to change and will continue to transform lifestyles. The concept of the Internet of Everything (IoE) has emerged from the high speed, low latency, high network density, and improved energy efficiency of 4G. These advancements have enabled the connection of virtually anything. In conjunction with smart network technologies, the Internet of Everything (IoE) encompasses a network of networks that includes people, objects, processes, and data [10, 11, &12]. This innovative concept will streamline the execution of simple and complex tasks in daily life, making them more intuitive and efficient. Consequently, it has fostered a distinct culture where there is interaction between people and machines, machines and people, people and machines, and machines among themselves [13].

Web 3.0

This represents the internet of the future, which will give rise to decentralized social networks that prioritize high privacy and user data control. In this future, businesses will no longer hold exclusive rights to offer services; instead, individuals will communicate on networks based on their own needs and preferences. Machine learning will be crucial in enabling individuals to share personal data without relying on a centralized network. Additionally, networks will provide data

to network helpers such as chatbots, personal assistants, and intelligent search engines. Machine learning will also facilitate machine-to-machine communication based on data input and processing results. Web 3.0 boasts a variety of features, with some of the most significant ones including:-

- Decentralized Social Networks
- Block-chain Marketplaces
- Personalized Recommendation
- Autonomous Agents
- Open Data
- Smart Contracts
- Enhanced Security and Privacy
- Decentralized Identity
- Distributed Cloud Computing
- VR and AR
- IoT
- Digital Asset Management
- Machine to Machine Transaction
- Knowledge Graph

Applications of 5G for Web 3.0

Web 3.0, often dubbed the next generation of the internet, prioritizes high privacy, security, and user control over data, while 5G enhances mobile connectivity speed. Together, they have the potential to simplify complex issues. The following points provide a brief overview of several potential applications of Web 3.0 facilitated by 5G in various areas:

- **Decentralized Finance (DeFi):** These are blockchain-based financial applications that enable lending, borrowing, and other financial activities without intermediaries. They primarily use crypto-currencies, which carry high risk, high interest rates, and are prone to common coding errors.
- **Autonomous Organizations:** This technology helps to develop decentralized, member-governed organizations that will run on smart contracts.
- **Virtual and Augmented Reality:** This technology merges the physical and digital realms to produce immersive digital experiences.

- **Distributed Social Networks:** These are social networks owned and operated by users, distributing content without the need for centralized platforms.
- **Self-Sovereign Identity:** This term refers to digital identities used for verification and authentication, owned and managed by a single individual.
- **Crypto-currency and block-chain transactions:** Web 3.0 utilizes blockchain technologies to ensure secure transactions, while 5G provides rapid response confirmation without latency.
- **Content delivery:** Web3.0 will produce a substantial amount of data, including high-definition audio, video, and images, which will require access through a 5G network.
- **Decentralized cloud and edge computing:** IoT devices can process data near the device or user due to 5G's high speed and low latency. They can also store this processed data on the cloud for future use.
- **Highly safe and private communication:** 5G will provide high security and privacy features for web3.0 applications' data through the use of state-of-the-art encryption protocols.
- **Decentralized Apps:** Web3.0 provides a range of decentralized applications that function on block chain networks. The high speed of 5G enables these applications to interact in real-time.

Future Trends of 5G in Web 3.0

It is widely recognized that technology plays a crucial role in the economic growth and sustainable development of any country. 5G network technology has the potential to significantly enhance innovation and productivity across all sectors, leading to substantial job creation. Some key points regarding this are outlined below:-

- The global 5G market is projected to reach \$667.9 billion by 2026, with a compound annual growth rate of 122.3% from 2020 to 2026. (Source: Markets and Markets) • In the United States, 5G networks are anticipated to cover 75% of the population by 2025. (Source: CTIA)
- 5G speeds are 20 times faster than 4G networks, with potential speeds of up to 10 Gbps. (Source: Qualcomm)
- 5G networks can support up to 1 million devices per square kilometer, significantly more than 4G networks, thus offering greater efficiency. (Source: Ericsson)

- The global market for Web 3.0 is expected to reach \$3.8 trillion by 2030. (Source: Frost & Sullivan) • The low latency of 5G enables technologies like self-driving vehicles, remote surgery, and augmented reality. (Source: Ericsson)
- 5G networks consume 90% less power than 4G networks, resulting in significant environmental benefits. (Source: Huawei)
- A Gartner survey predicts that 75% of enterprise applications will use Web 3.0 by 2025. (Source: Gartner) • The number of active blockchain wallets has grown from 6.7 million in 2016 to over 70 million in 2021. (Source: Statista)
- The global blockchain market size is expected to expand from \$3 billion in 2020 to \$39.7 billion by 2025, with a compound annual growth rate of 67.3%. (Source: Markets and Markets) • A Deloitte report indicates that 92% of survey respondents believe 5G will be important for their organization's digital transformation. (Source: Deloitte)
- The number of 5G connections worldwide is forecast to reach 3.5 billion by 2026. (Source: Statista)
- The number of Internet of Things (IoT) devices is expected to reach 41.6 billion by 2025, up from 8.74 billion in 2020. (Source: Statista) [17, 18, 19, 20&21]

Aspect	Description	Estimated Value/Impact
Web 3.0 Market Size (2023)	Global market size of Web 3.0 technologies.	\$3.2 billion USD (Source: Grand View Research)
5G Infrastructure Investment (2023-2027)	Projected global investment in 5G infrastructure.	\$1.3 trillion USD (Source: GSMA)
Reduction in dApp Transaction Latency (5G vs. 4G)	Estimated reduction in transaction latency for decentralized applications with 5G compared to 4G.	Up to 90% (Source: Research by Ericsson)
Growth of Metaverse Users by 2030 (using 5G)	Estimated increase in the number of metaverse users globally by 2030 with significant 5G adoption.	Up to 5 billion users (Source: Report by PwC)
Increase in IoT Device Connections by 2030 (with 5G)	Estimated rise in the number of connected Internet of Things (IoT) devices by 2030 due to the widespread deployment of 5G.	Up to 75 billion devices (Source: IHS Markit)

The table above illustrates how Web 3.0 and 5G technologies are revolutionizing businesses and industries. These technologies are enabling decentralized IoT, blockchain, real-time data analysis, autonomous vehicles, distributed cloud computing, immersive VR/AR experiences, supply chain management, energy management, e-governance, financial inclusion, and more.

Challenges

Web 3.0 and 5G are in their early stages and offer numerous benefits when used together. However, these technologies also encounter several challenges. Establishing the infrastructure for 5G involves expensive hardware and requires technical expertise. Additionally, Web 3.0 will generate a large amount of data that could congest the network and give rise to new legal and regulatory concerns. New sets of protocols and cryptographic algorithms will be needed to securely and promptly transmit data. Moreover, understanding and developing new applications will present challenges, including environmental impact and the digital divide, among others.

Conclusion

This paper highlights the significant potential of integrating Web 3.0 with 5G, yet acknowledges several obstacles to their full utilization. Key challenges include user acceptance and awareness, scalability, sustainability, privacy and security, high cost, standardization, interoperability, and the digital divide. Bridging coverage gaps and addressing the digital divide are crucial for expanding 5G deployment. Robust security measures are essential to protect information and financial assets, while addressing privacy concerns is crucial for ensuring accountability and transparency. The fragmented ecosystem and evolving regulatory landscape pose uncertainties for businesses and developers, potentially hindering innovation and delaying the rollout of new services and applications. Achieving scalability and sustainability is essential for meeting the needs of a large user base without compromising performance.

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ORIGINAL RESEARCH ARTICLE

Self-adaptive credit-based framework for blockchain-based IoT (BIoT)

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ABSTRACT

The Internet of Things (IoT) connects and improves crucial global technologies like sensor nodes. The Internet is evolving from a human-centric network to one that enables inanimate things to wirelessly communicate with one another. The lifespan of an IoT network may be affected by the energy requirements of its routing protocol. Data is transmitted through the internet, and it may compromise the security of the data. An attacker can access the data and modify the data in order to break the security of the network. Although various solutions are available, such as cryptography and steganography-based approaches, none provide secure data transmission in large-scale networks with low energy consumption. Blockchain technology plays a vital role in the prevention of network malware. In this paper, an attempt has been made to propose a credit-based mechanism for secure data transmission in an efficient manner with low energy consumption. In order to achieve optimal results, the proposed framework uses blockchain for data security and credit distribution to avoid delays. The proposed framework has been simulated using the Contiki Cooja (CC) simulator. The efficiency of the proposed framework is measured by comparing its performance with state-of-the-art techniques.

Keywords: blockchain; IoT; routing; attack; credit and security

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1. Introduction

IoT is a global network of individually identifiable physical items (e.g., gadgets, machines, appliances) embedded with electronics, software, and sensors. Without any human interaction, IoT devices may share data via the web^[1]. The information generated, analyzed, and choices made by the IoT are all related to the linked items. The full promise of IoT-based applications has not yet been realized, however, because of security issues arising from the sensitive nature of the data handled by such apps^[2]. Unfortunately, blockchains have a high computational requirement that is challenging to achieve in a scenario where there are little available resources for the IoT. It is expected that IoT devices would be needed to participate in a blockchain consensus process in the future^[3], despite the fact that they are now unable to do so. One approach to do this is by hardware acceleration of the most computationally costly section of the protocol, which is often a large

number of iterations through the cryptography-based approaches and hash function^[4].

Each participant in a blockchain network stores their own copy of each transaction^[5]. All financial dealings are open to public view, making it easy to spot any alterations. Imagine a city where available parking spots are updated in real time online. When sensors find a vacant parking spot, they notify the master database. The authenticity of the sensor readings has been compromised. By removing the middleman, a blockchain network of linked devices can guarantee that unaltered, real-time data from sensors reaches all nodes in the network. The blockchain also makes it possible for IoT gadgets to independently exchange data and make choices^[6]. In addition to digital currency, the Ethereum Blockchain may be used as a platform for the creation of decentralized apps through the deployment of executable scripts known as smart contracts. The Ethereum Virtual computer (EVM) is a virtual computer used to execute such programs; it provides a layer of abstraction between the program and the underlying hardware^[7].

Security issues including single point of failure, trust, and privacy are raised by the current trend toward centralized IoT systems. The blockchain's use of cryptography allows for reliability to be maintained without the requirement for a trusted third party. Recent interest in BIoT applications has been driven by the technology's promise to enhance privacy and security^[8].

Data from the smart home's heterogeneous IoT devices, which might be of varying sizes and types, are communicated to the smart home gateway in a gateway-style BIoT architecture. The suggested design calls for a smart home gateway that can precisely regulate the IoT and process data as instructed by the user. However, there are restrictions on the suggested network design due to the increased computational complexity introduced by blockchain transactions^[9]. Different BIoT devices and organization applications are depicted in **Figure 1**. BIoT architecture, which aims to address computational complexity challenges. The suggested architecture relies on the Ethereum Blockchain since it is the only solution now available that can serve the general public. The Ethereum Blockchain also facilitates cryptocurrency payment via the Ether token, in addition to blockchain programmability^[10].

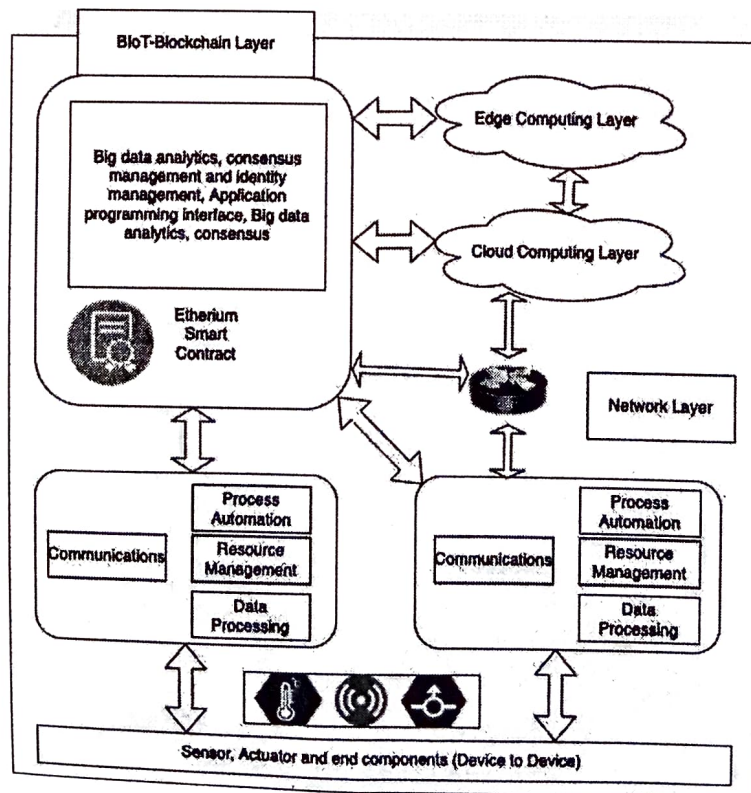


Figure 1. BIoT architecture.

Numerous devices capable of communication, computation, and data storage make up the IoT's physical layer. Modules for identity management, consensus, and P2P communication are all examples of typical services that may be found in the IoT blockchain service layer.

In addition, the distributed ledger is replicated on every BIoT device, so that any changes made to the IoT network are reflected in the network within minutes, if not seconds. Blockchain's big data analytics module can effectively store and analyse this data online, which is especially useful since IoT devices generate enormous amounts of data that cannot be managed with conventional techniques.

Multiple transactions are recorded in structured ledges, necessitating further data analysis. Smart contracts are another essential element of blockchain technology since they allow for autonomous choices to be made based on predefined parameters. An intelligent agreement is a piece of blockchain-based software that takes action based on the fulfillment or validation of predetermined conditions. The management of consensus is also an integral part of the coupling of blockchain and BIoT. The network's integrity relies on the central server's diligence in monitoring all of the nodes. It is possible for BIoT apps to use the API to connect to blockchain services. BIoT applications and data visualization processes make it possible for decision-makers to make informed judgments using data collected from actual BIoT devices at the application layer.

With the cloud computing layer in place, the company may greatly increase its storage capacity without investing in more on-premises servers. Information may be gathered from various sources and mediums, and it can be accessed from anywhere at any time^[11].

The major contribution of this paper is:

- To examine the role of BIoT in secure data transmission for large-scale networks.
- To provide a credit-based framework for secure and fast data transmission in the IoT
- To provide a mathematical analysis of the proposed framework.
- To provide simulation results obtained from Cooja Simulator and compare the results with state-of-the-art techniques with performance metrics such as energy consumption and transaction cost.

The paper is divided into five sections. In section 1, an introduction to BIoT has been presented, along with the basic architecture of BIoT. Moreover, the contribution of the paper has been presented in this section. Section 2 discusses the review of the literature on different existing techniques based on BIoT that are used for secure, efficient data transmission. In section 3, the proposed framework has been discussed in depth with mathematical analysis. Section 4 provides simulation results that cover the tool used, simulation parameters, and performance metrics. At last, in section 5, the conclusion of the paper has been presented.

2. Related work

In order to construct goal-driven IoT systems that may autonomously Self-adapt to security threats in their surroundings (ASSERT), Alkhabbas et al.^[12] suggest a distributed architectural Approach. ASSERT makes use of methods and concepts including agents, feedback loops, and blockchain to keep systems safe and increase confidence in their adaptations.

To reduce power consumption, Ahmed et al.^[13] presented framework that use a cluster-level data aggregation technique. With blockchain embedded into a cloud server, the edge may be validated by the blockchain to guarantee the security of the services provided to IoT devices in real time. Finally, they simulated the system to determine its performance and compared it to that of more standard energy-efficient methods.

A safe and trustworthy algorithm driven by blockchain technology was presented by Sodhro et al.^[14]. The suggested technique introduces a chain of blocks that uses less power, fewer cores, and somewhat more

communication and computation bits to handle keys in a random fashion.

Mao et al.^[15] provided a thorough overview of strategies for communicating and computing that minimize energy consumption in Industrial internet of things(IIoT) systems. In addition, classify the works already out there, study, debate, and compare the works to investigate their advantages and disadvantages.

The blockchain-based problem was examined at extent by Fernando and Saravannan^[16], who offered solutions that included improving the blockchain's consensus mechanism and employing renewable energy sources to reduce the network's carbon footprint. Blockchain technology has to explore less energy-intensive alternatives to improve its ethical and industrial compliance and increase its flexibility across all industries.

For effective communication in industrial NIB applications, Sodhro et al.^[17] present an ML-driven mobility management approach. Similarly, Zahid et al.^[18] provide a state-of-the-art architecture for smart and connected healthcare that concurrently improves energy economy, battery life, and dependability.

For edge computing enabled IoT, Wang et al.^[19] presented a framework that uses a security label, comprising the task's security level (SL) and its completion criteria, is intergraded into the block header to limit the ability of task receivers. In addition, BSDA protects against privacy leaks by segmenting critical tasks and task recipients.

Zhang et al.^[20] presented an enhanced efficient-aware method (EEA) based on self-adaptive power regulation to reduce energy demand and increase the battery's useful life and improve its dependability. Finally, propose a layered, DL-driven design for IoMT. A fourth proposal makes use of wireless channel characteristics and body postures to simulate the energy consumption of IoMT.

In order to increase the scalability and decentralization of the prosumer grouping mechanism in the context of peer-to-peer energy trading, Ali et al.^[21] propose a framework, an adaptive model that makes use of blockchain technology. Prosumer groups may be formed and transaction data can be stored using smart contracts.

In order to establish the amount of support and the attained satisfaction for IoT multimedia services, Singh and Lee^[22] undertake a research of numerous self-adaptive security techniques for IoT multimedia and analyze them based on crucial, security criteria.

To counteract the risks to data privacy and security posed by IoT networks, Satamraju and Malarkodi^[23] created a framework, a novel paradigm that combines the two technologies. Integrating authentication of devices, permission and access control, and data management are all tasks that benefit greatly from the usage of smart contracts.

Rasolroveicy^[24] studied the latest findings in the field of Blockchain and IoT research, as well as self-adaptive systems and the documentation of various Blockchain platforms.

Wu et al.^[25] build an optimistic scenario on top of blockchain technology and propose an analytical approach to the problem of energy usage balance optimization across several mobile devices and tasks. The corresponding ratio of approximation is studied. There have been various simulation experiments that evaluate the overall energy demand optimization approach vs the random technique.

Blockchain-based framework of an initial investigation by Yuan and Wang^[26]. They discuss the connection between B2 ITS and PtMS, keeping in mind that blockchain is one of the protected and trustworthy architectures for constructing the recently established parallel transportation management systems (PtMS).

Articles proposing IoT security solutions are surveyed by Banerjee et al.^[27]. The authors note many things, including the dearth of readily accessible IoT datasets for use by academics and industry professionals.

A more accurate evaluation of HD is possible with the use of an IoT platform developed by Subahi et al.^[28], which employs a bayesian mechanism. Vital indicators, such as electrocardiogram (ECG) and blood pressure, are recorded and sent to a computer while the patient wears the wristwatch and pulse sensor gadget.

Javaid and Sikdar^[29] propose a blockchain architecture based on a block checkpoint mechanism and a dynamic proof-of-work consensus. The checkpoint establishes a distinct way to produce the next block hash in the blockchain.

Rana et al.^[30] examines the current developments of various BIoT architectures, paying special attention to the technology, applications, difficulties, and possibilities that have arisen in this field. The Chinese remainder theorem (CRT) based approach is suggested and compared to the secure hash algorithm (SHA-256) for use in encrypting and generating keys for elliptical curve cryptography (ECC).

3. Proposed framework

This section has introduced the proposed framework for ensuring the safety of IoT data transmissions. This framework involves assigning and exchanging credits to nodes based on their past history of data exchange within the network. These credits represent value within the IoT and can be used to reward nodes.

In the first phase of proposed framework, all nodes are set up to be equally weighted contributors to the network so that routing may begin. At this stage, nodes receive the resources and TTL values they will use during the routing process. After the network has been set up, messages are sent between nodes using sender nodes and forwarded using relay nodes. Initiating the routing procedure also stimuli the agent node. An agent is a relay node that keeps track of how many bundle requests have been sent. It also keeps a database of each node's trustworthiness. Our suggested approach uses a round-robin distribution method in which messages are sent from one agent node to another. Here, the agent gathers up all of the requests at once and then sends out the requests as a group to each of the other nodes. Nodes calculate the trustworthiness of the following node based on the messages they've forwarded to it. When nodes relay messages, this trust value is also modified. The Figure 2 illustrates how the proposed approach works, which begins with the deployment of nodes at random to start the routing process through the COAP routing protocol. In addition, a node designated as an agent is made active and tasked with determining the trustworthiness of each node in the network. If the source node's packet id (S_packet) matches the destination node's packet id (D_packet), then the node is trusted; otherwise, it is labelled as malicious.

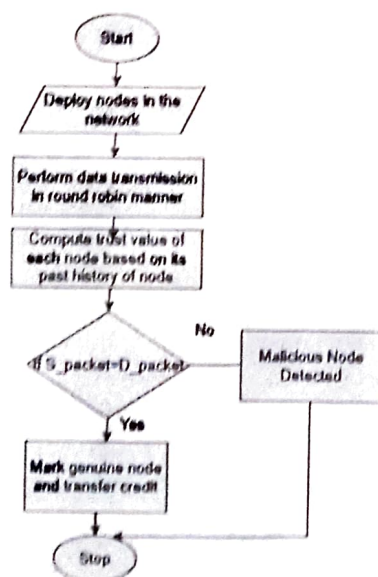


Figure 2. Proposed framework.

Mathematical model

This section provides mathematical analysis of above-mentioned algorithm. Here trust value (tv) of each node (N) is calculated. The trust value is fetched on the basis of initialization of total number of packets at sender side (S_packet) in perspective of delivery of total number of packets at receiver side (R_packet) as depicted in Equation (1).

$$tv = \frac{\text{Transmitted}}{\text{Received}} - \text{Initialized} \quad (1)$$

In this case, as shown in Equation (2), the estimated number of initialised packets ($E_{\text{initialized}}$) is a function of both the Preparation stage ($T_{\text{preparation}}$) and the used time (T_{used}). The sum of the Preparation and used times reveals the sum of messages that were started and maintained throughout the communication.

$$E_{\text{initialized}_p} = T_{\text{preparation}} \times T_{\text{used}} \quad (2)$$

The likelihood of a message being delivered successfully Using Equation (3), we can determine $P(D)$. Specifically, think about the scenario where S is the event that a message is distributed and T is the occurrence that node is not malicious. To conclude, we employ Bayes' Theorem to

$$P(D) = \frac{P(T)P(S/T)}{P(T/S)} \quad (3)$$

$P(S/T)$ = Checking with local tv to see how much a node is malicious. Here, we'll assume the node is not malicious by giving $P(T/S)$ as 1. The computed tv value is then written to the node's buffer storage. Agent node performs tv verification to ensure the node can be trusted.

4. Results

The proposed framework has been simulated with Cooja simulator. The Cooja is based on C programming and it is open-source platform for simulation. Figure 3 depicts the simulation scenario of proposed framework. The Sky notes nodes are varied from 10 to 30 in the interval of 10 for performing simulation. Furthermore, the Table 1 depicts the parameters used for simulation in Cooja simulator. The nodes communicate using Constrained Application Protocol (COAP). It is a designed for use with constrained devices with low power and low-power, lossy networks like those found in the IoT applications. COAP is intended to provide a lightweight and efficient way for these devices to communicate with each other.

Table 1. Simulation parameters.

Simulation parameters	Values
Range	50 m
OS	Contiki 2.7
Simulation duration	60 minutes
Routing	COAP
Node	Sky mote
Topology	Linear

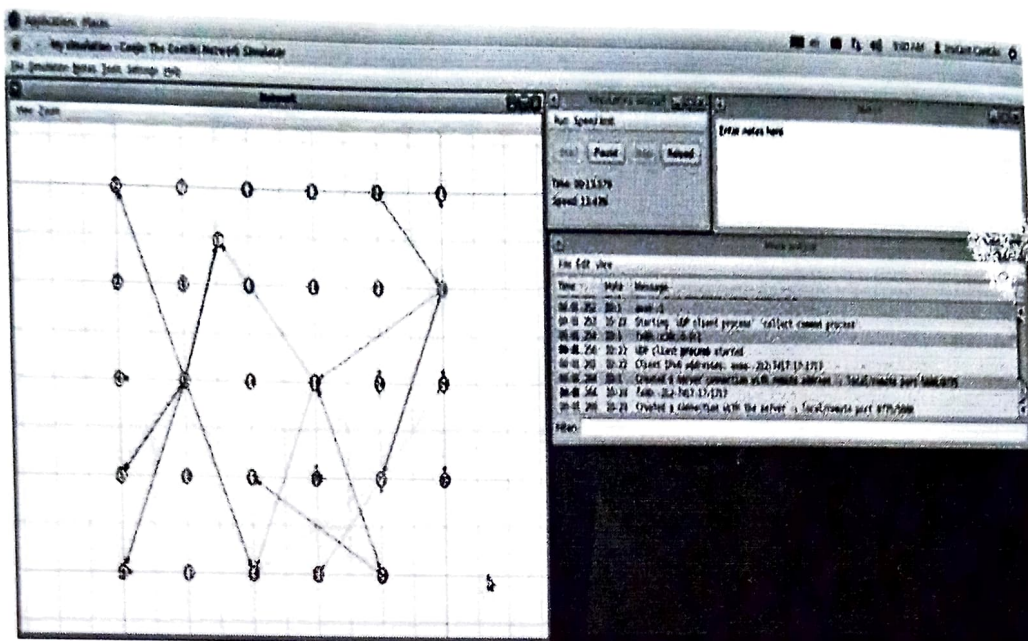
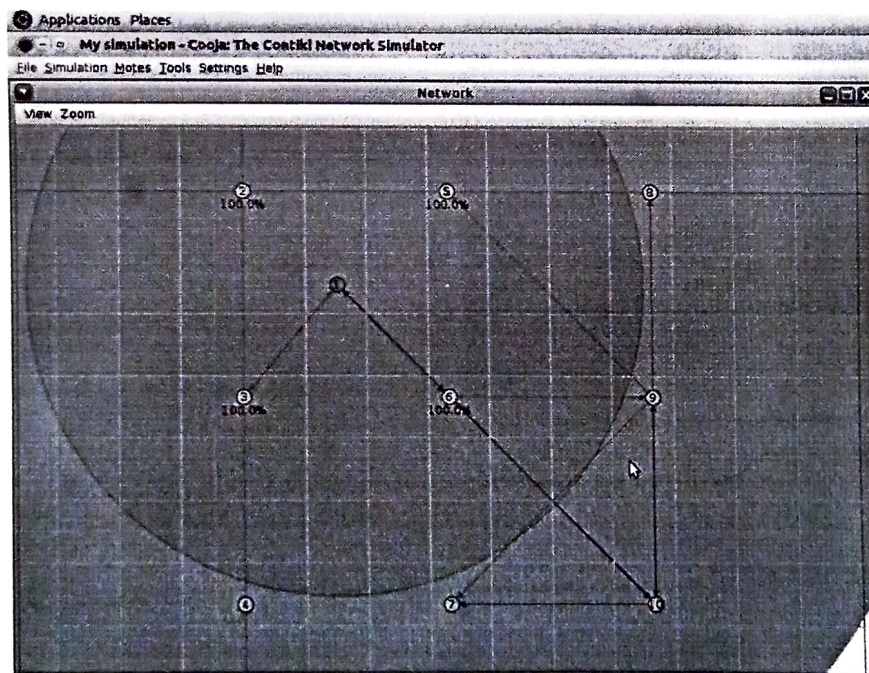


Figure 4 depicts the simulation scenario of the proposed framework when the number of nodes is 10. Whereas **Figures 5** and **6** show the simulation of 20 and 30 nodes, here the blue line shows the actual message transmission, whereas the green circle shows the range of nodes.



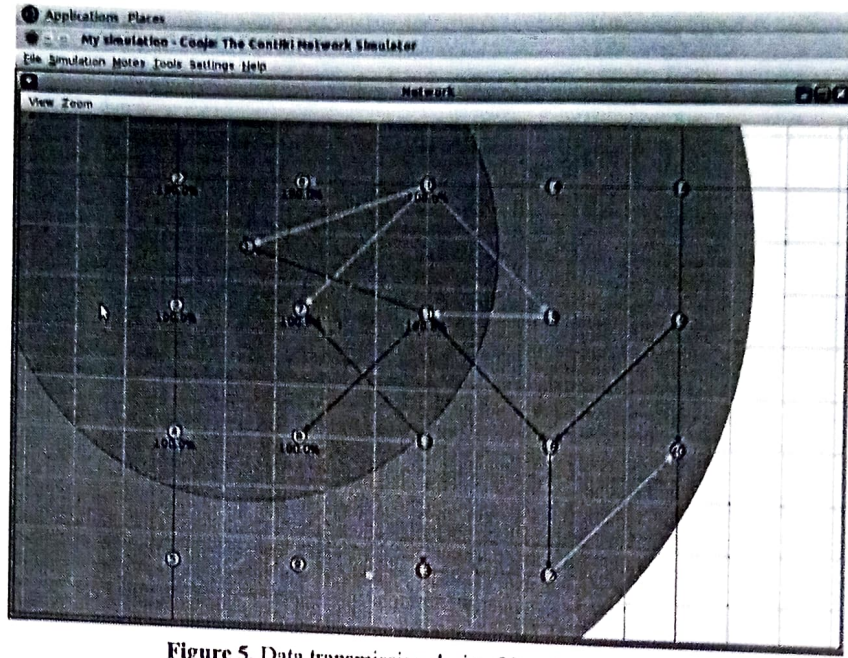


Figure 5. Data transmission during 20 nodes scenarios.

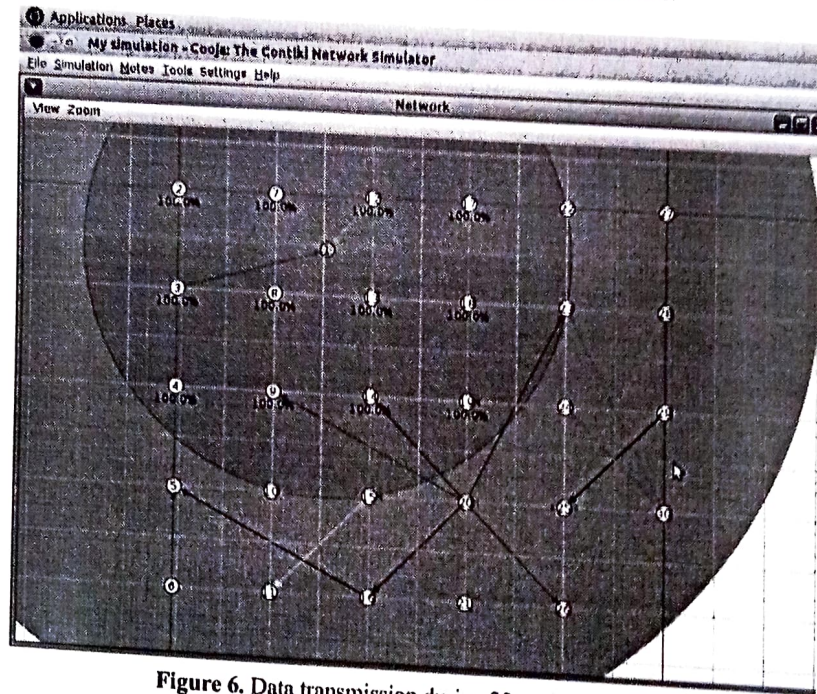


Figure 6. Data transmission during 30 nodes scenario.

Figure 7 depicts the energy consumption comparison of the proposed credit-based framework with the existing ECC-CRT approach. The purpose of the improvements implemented in this study is to improve the total efficiency of the system and make it last longer. Battery life is a key consideration for IoT nodes due to their dependence on constant power to function. Here, focus on the real energy consumption of the IoT and the millijoule scale that models the estimation approach for the energy consumption rate. In the proposed credit-based framework, the energy consumption rate is low compared to the existing approach because the proposed framework distributes credits in order to achieve a low message drop rate. As messages are successfully delivered to the destination node without any interruption by malware, the rate of energy consumption decreases. Furthermore, a packet delivery ratio (PDR) comparison is depicted in Figure 8. The PDR is used to measure the performance of a network in terms of successful delivery of messages from the perspective of the total number of messages it receives. In the proposed framework, the rate of PDR is high compared to the existing approach.

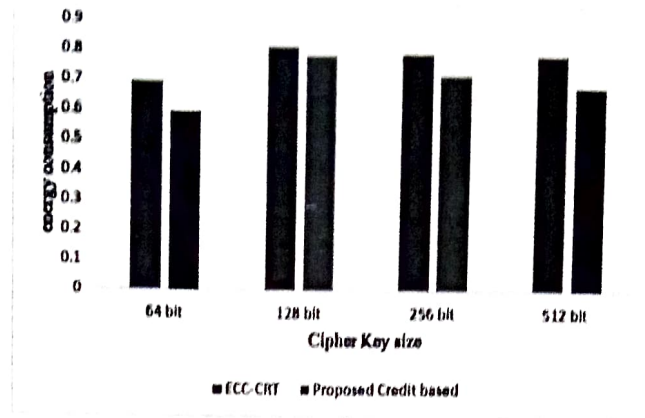


Figure 7. Power consumption comparison of proposed framework and existing approach.

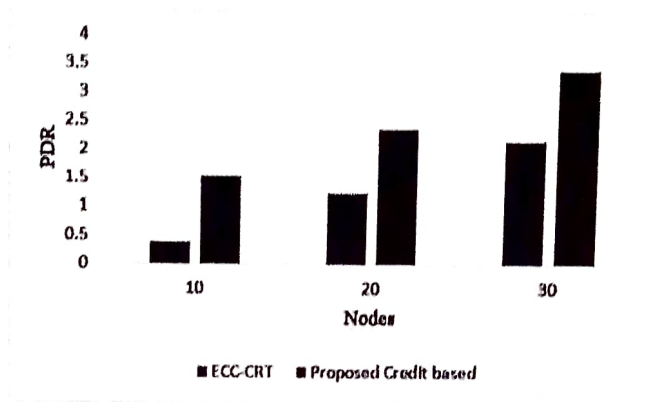


Figure 8. PDR comparison of proposed framework and existing approach.

5. Conclusion

The critical nature of most IoT resources makes them vulnerable to security breaches. To prevent network attacks, it is necessary to apply blockchain to the IoT network in order to achieve secure data transmission. This paper provides a secure framework that uses a credit-based method in which some credits or rewards are assigned to the node for the successful delivery of messages. This credit distribution method is really beneficial for fast and secure data exchange in the IoT. In the proposed framework, the malware is detected based on the past history of nodes by checking the number of messages it actually transferred in perspective of the total messages it received. The simulation of proposed framework has been performed using Cooja Simulator, and results depict that in proposed framework, the energy consumption is less and the rate of transaction cost is higher as compared to the existing technique. The healthcare and intelligent business sectors are two possible applications of our work. A potential next step for this research is to examine how well the proposed service model integrates with other IoT frameworks. The suggested method will be evaluated and refined in future work to ensure its applicability to the actual BIoT system.

Author contributions

Conceptualization, RR and P; methodology, RR and P; software, RB; validation, SM; formal analysis, AJ; writing—original draft preparation, SR. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no conflict of interest.

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8

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Cyber Security Ethics for Modern Users

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Abstract

In this paper we analyse about today's time issue, challenges and ethics regarding cyber security which plays an important role in the field of information and communication technology. Now the days 90% public using IT equipments like smart phone and using free internet services. Securing the personal information has become one of the biggest challenges in the present day for all users. Cyber Security accepts a vigorous role in the area of information and communication technology. The cyber security the main thing that originates in mind is 'cyber crimes' which are aggregate colossal daily. Now the days all governments and private organizations are taking numerous measures to keep these cyber wrong doings for their users. The significant trends of cyber security and the consequence of cyber security discuss in it. The cyber terrorism could make associations lose billions of dollars in the region of organizations.

1. Introduction:

Cyber security is a major issue and headache for each and every users and it is the practice of protecting computers, networks, devices, software's from digital attack by unauthorised access. These cyber attacks are usually aimed at accessing, changing, or destroying sensitive information in the system and data and extorting money from users via ransomware. An effective cyber security method has numerous layers of defense spread across the networks, computers, programs, or information's that one aims to keep non-toxic. In a society, the processes, the people and tools must all accompaniment one alternative to generate a real defense on or after cyber-attacks. Unified threat management systems can mechanism additions across select Cisco Security goods and speed up key security processes functions: discovery, examination, and remediation.

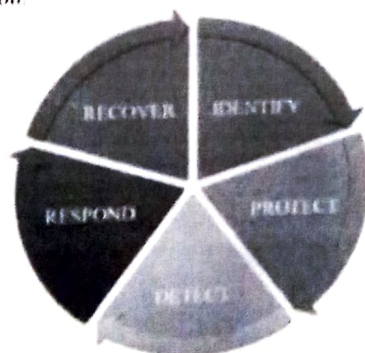


Figure-1: Cyber Security Life Cycle

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ORIGINAL RESEARCH PAPER

Computer Science

MOBILE APP TESTING TECHNIQUES, ENVIRONMENT AND CHALLENGES

KEY WORDS: Mobile,
Testing, Mobility, Bluetooth

Uma Sharma

Asstt. Professor, Deptt. of Computer Science, Govt. College Hansi (Hisar)
Haryana

ABSTRACT

In this paper I, investigated new research directions and ideas on mobile applications testing process, challenges and their mobility. When mobile applications testing are becoming so extraordinarily adopted in the field of IT and androids era, it is still unclear if they deserve any specific testing approach for their verification and validation. The term mobile testing refers to various types of testing techniques which is adopting. We use mobile applications testing to refer to "testing activities for native and Web applications on mobile devices using well-defined software test methods and tools to ensure quality in functions, behaviors, performance, and quality of service, as well as features, such as mobility, usability, interoperability, connectivity, security, and privacy.

1. INTRODUCTION

Mobile is a moving device and mobile applications refers to the software which is being used in Smart phones, which is also known as Smart mobile terminals, are high-end mobile phones that are built on mobile operating systems and offer advanced computing and connectivity. Modern smart phones have stronger processors, growing memories, high resolution touch-screens, richer sensors, GPS, high-speed data access through wi-fi. Mobile applications, also known as mobile apps in shorts, are software applications that are developed to run on smart phones and mobile devices.

The basic Comparison between desktop and web applications, mobile applications have to deal with specific challenges. Mobile applications have to process inputs from users as well as inputs from constantly changing contexts. In additionally, smart phones and mobile devices are still limited in their resources compared to modern personal computers and laptops using networks. Further, there is a large diversity of mobile operating systems, and the same operating system gets upgraded regularly and in relatively short time periods.

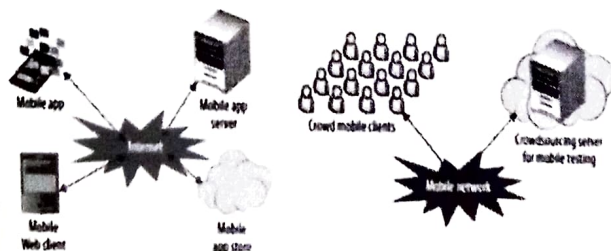


Figure: Mobile Networks

The exponential growth of this market and the criticality of the mobile app developed impose an increased attention to dependability aspects of applications which is being running on them. As demonstrated in some studies on mobile applications are not bug free and new software required to be test in technological aspect. Those applications are mobile applications different from traditional ones, so to require different and specialized new testing techniques.

2. Objective And Testing Environment

The main objectives is functionality and behavior including device-specific functions such as gesture interaction, QoS requirements, usability, better security features, and privacy. Web app testing aims to validate the quality of mobile Web apps using different Web browsers on diverse mobile devices. Web apps usually provide users with a thin mobile client to access online functions from the back-end server. Thus, in addition to functionality and behavior, QoS requirements, usability, security, and privacy, mobile Web app testing focuses on connectivity and interoperability.

The testing environment underlying mobile platform or operating system constitutes the testing environment. To achieve effective automation, testing solutions should be compatible, deployable, and executable on multiple platforms. In mobile apps, the underlying Web browser is the testing environment may become better one.

3. Major Implications On Testing

3.1. What A Mobile Application Is?

A mobile application is vaguely defined as an application running on mobile devices and/or taking in input contextual information. In order to improve our degree of knowledge on the topic, I decided to analyze the role of mobility and context-awareness on mobile applications.

In mobile computing an application is considered to be mobile if it runs on an electronic device that may move. An application is aware of the computing environment in which it runs, and adapts/reacts according to its computing, user, physical, or time context and traditional applications rewritten to run on mobile devices. A direct impact on testing, Apps for Mobile applications inherit the peculiarities of mobile applications i.e mobility, autonomy, and connectivity.

3.2. Mobile Connectivity And Autonomy

Peculiarities: mobile connectivity is one of the most peculiar, as well as critical, characteristics of a mobile application. Mobile applications typically connect to mobile networks, which may vary in speed, security, and reliability.

Implications on Testing: the application reliability, performance, security, and correct functioning strongly rely on the available connectivity type. Functional and extra functional testing has to be performed in different connectivity scenarios and networks. Bugs related to unreliable Wi-Fi, 3G, or Bluetooth connections have been reported.

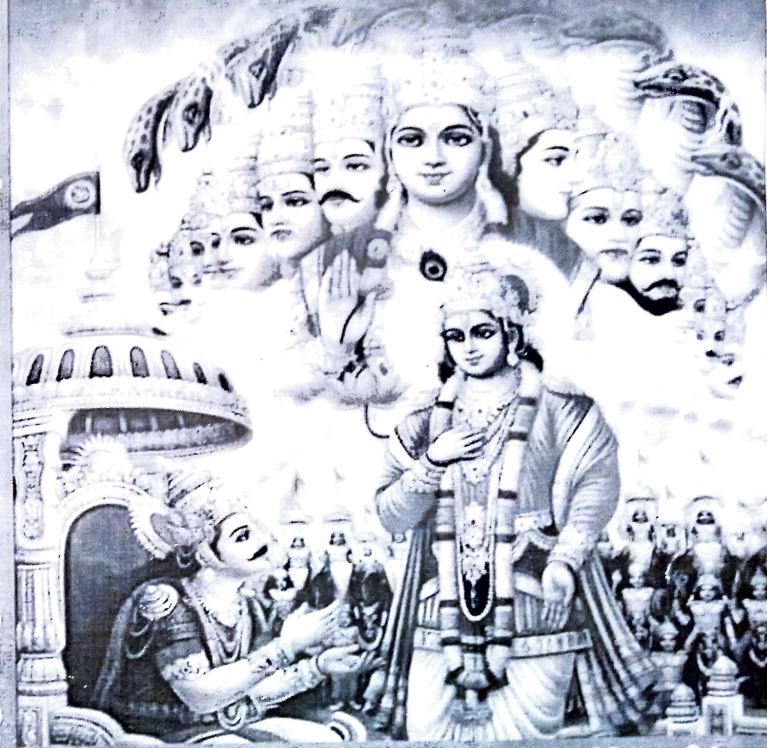
The mobile differently from desktop or laptop computers, mobile devices can never rely on an electrical outlet for functioning. Different mobile applications may require very different energy consumption. Considering that a 200 hours stand-by autonomy of an iPhone 4S drops to 10 hours when a Wi-Fi connection is enabled, and to 7 hours when a 3G connection is active, an application requiring full time 3G connectivity strongly impacts the device autonomy. Reduced autonomy can be an issue autonomy improvement can instead be a business advantage.

3.3. New User Interfaces And Adaptation

Peculiarities: when developing a mobile application, developers have to follow some strictly defined guidelines for producing mobile applications GUIs. Mobile applications may in fact look differently depending on the mobile device screen resolution and dimension.

7(2)1

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"IoT and Society: Current Trends and Future Directions" is a compelling exploration of the dynamic relationship between the Internet of Things (IoT) and contemporary society. Authored by experts at the forefront of IoT research, this book provides a comprehensive overview of the latest trends that have been shaping the intersection of technology and society. The book provides a forward-looking perspective on the evolving relationship between IoT and society. By examining recent trends and projecting future developments, the book serves as an invaluable resource for researchers, practitioners, and anyone interested in understanding the trajectory of IoT's impact on our interconnected world.

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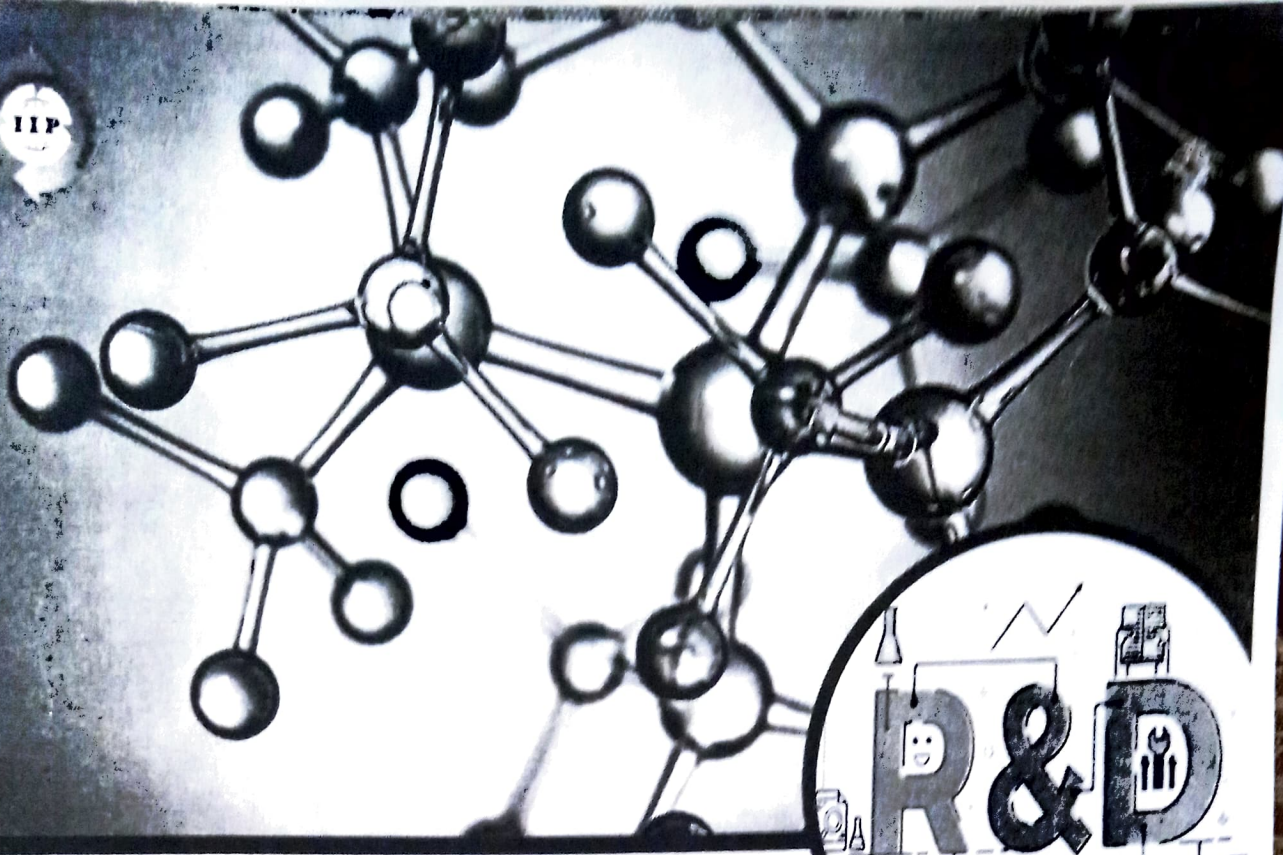
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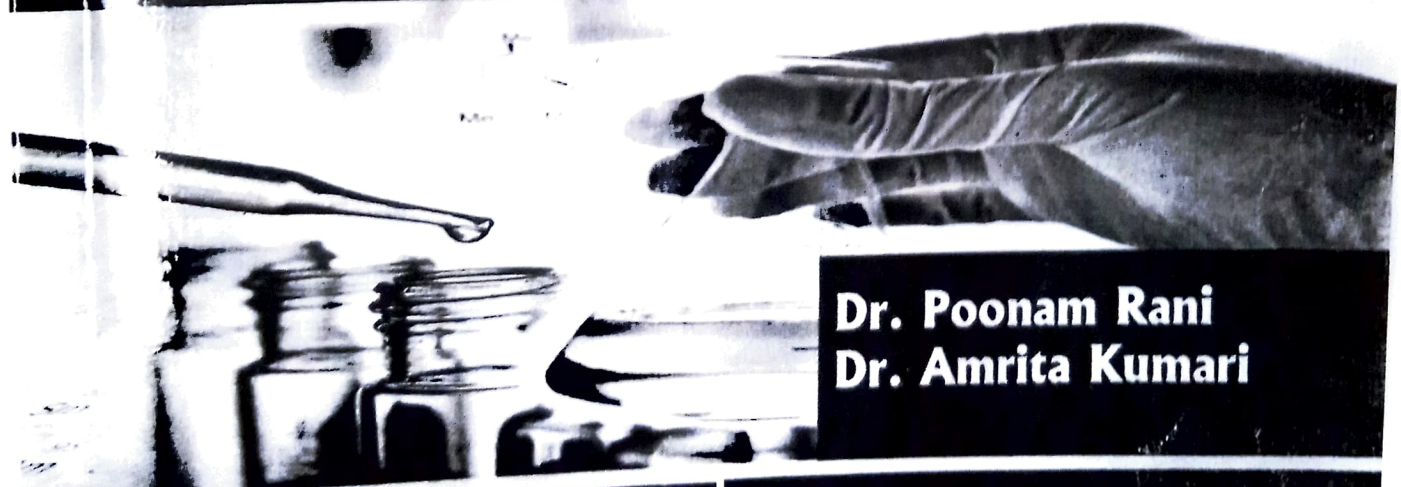
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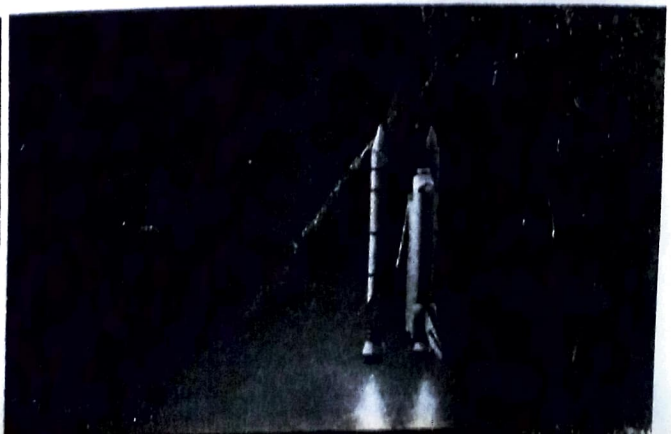
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Section B: Action@75	101-173
13. Digital India: Navigating Challenges and Embracing Opportunities	103
.....	
<i>Dr. Anupama and Dr. Anju</i>	
14. Stress Management Techniques for Adolescents	118
.....	
<i>Dr. Manoj Rani</i>	
15. Evaluation of Impact and Challenges Faced by Digital India	124
.....	
<i>Dr. Anuradha Malik</i>	
16. Nanotechnology : A Global Scenario	130
.....	
<i>Asha Rani and Dr. Anita</i>	
17. Mathematical Modelling	134
.....	
<i>Suman Kumari and Manav Dalal</i>	
18. Artificial Intelligence & Human Resource Management: A New Era	140
.....	
<i>Manoj Kumar, Deepa, Barkha and Rohit Kumar</i>	
19. Use of ICT in Teaching Learning Pedagogy	149
.....	
<i>Dr. Banta Singh Jangra</i>	

Use of ICT in Teaching Learning Pedagogy

Dr. Banta Singh Jangra

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Abstract

Information and Communication Technology (ICT) is latest and recent trends name of currently used computer based technology which is earlier known as Information technology (IT). The Role of Information and Communication Technology (ICT) in teaching learning process is very important for 21st century teachers and students because after the covid-19 bad times of world peoples without Information and Communication Technology (ICT) and its equipments peoples are illiterate.

I. Introduction

Information and Communication Technology (ICT) a recent technology used by all peoples not only teachers and students but the real use of Information and Communication Technology (ICT) is being used by teachers because its playing vital role in modern teaching methodology and also its attract and attention capacity to be create for students in class room as well as online classes. Information and Communication Technology (ICT) never replace a teacher but it can enhance brain thinking and learning power in students. Using charts, graphs and multimedia (text, audio, video and image) in teaching pedagogy by a teacher make lecture interesting and learning oriented.

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