



Criteria 6 – Governance, Leadership and Management

Key Indicator-6.3. Faculty Empowerment Strategies

6.3.2. Number of teachers provided with financial support to attend conferences / workshops and towards payment of membership fee of professional bodies during the year 2024-25

Index

Sr. No.	Content	Page No.
1	Number of teachers provided with financial support to attend conferences / workshops and towards payment of membership fee of professional bodies during the year	2-25

6.3.2 Number of teachers provided with financial support to attend conferences / workshops and towards payment of membership fee of professional bodies during the year			
Name of teacher	Name of conference/ workshop attended for which financial support was provided	Name of the professional body for which membership fee was provided	Amount of support
Avinash Chavan	Maharashtra State FDP on "Intensive Training on Industry Connect & Cutting Edge Technologies", 29th July to 2 August, 2024	Maharashtra State Faculty Development Academy	1000
Subhasini Shukla	IEEE Conference Paper ID- 941 International Conference on "Computing for Sustainable Global Development", 2nd-4th April, 2025	Published the paper "Adaptive Audio Error Concealment Leveraging BER and PSNR Variability" for presentation in INDIACom-2025; sponsored by IEEE Delhi Section, scheduled to be held during 02nd -04th April, 2025 at Bharati Vidyapeeth, New Delhi (INDIA)	17579
Dr. Buddharatna Godbole	NATCON 2024	ACCE(I)	4130
Dr. Buddharatna Godbole	Implementation of NEP 2020	IIM Nagpur	24261



St. John College of Engineering and Management

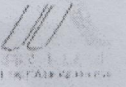
Autonomous Institute

(A Christian Religious Minority Institution)

Approved by AICTE and DTE, Affiliated to University of Mumbai / MSBTE

DTE Code : 3218 AICTE Permanent ID : 1-4790201

NAAC Accredited with Grade 'A+', Three Programs NBA Accredited



Date: 02/07/2024

To
Principal,
SJCEM, Palghar

Sub.: Request to Allow Attendance at 'Intensive Training on Industry Connect & Cutting-Edge Technologies'

Respected Madam,

I have applied for the 'Intensive Training on Industry Connect & Cutting-Edge Technologies' from 29th July to 02nd August 2024 (Residential). My application has been shortlisted. I kindly request your permission to attend this training, which will allow me to proceed with the payment process.

Attending this training will be highly beneficial for various reasons:

1. For the Individual: This training will enhance my knowledge and skills in cutting-edge technologies, allowing me to stay updated with the latest industry trends and advancements.
2. For the Department: The insights and knowledge I gain from this training can be shared with my colleagues, fostering a collaborative learning environment and improving our overall departmental expertise.
3. For the Institute: By participating in this training, I can help elevate the institute's reputation by integrating advanced technologies and industry practices into our curriculum, thereby attracting more students and collaborations with industry partners.

Accommodation and food will be taken care of by the MSFDA. I also request the approval of the budget for attending the training, as detailed below:

Expense	Amount (Rs.)
Registration Fee	1000
Traveling Cost (Tentatively)	1200
Total	2200

Thank you for your consideration.

Yours faithfully,

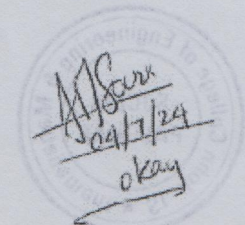
Chavan

Avinash Chavan
Assistant Professor
FE Department

*Hiw AIC for n.a.
As Faculty is in F.E
so no academic loss.
B.S. Laksh
21/7/24*

Noted and Recommended

*Shopey
21/7/2024*



St. John College of Engineering And Management (24-25)

St. John Technical Campus, Village Vevoor,
Manor Road, Palghar (East), Dist. Palghar,
Maharashtra-401404
State Name : Maharashtra, Code : 27
E-Mail : office@sjcem.edu.in

Bank Payment Voucher

M/s. Faculty Training & Develop. Expenses

Voucher No: BPV/SJCEM/24-25/07/042

Date : 8-Jul-24

Dear Sir/Madam,

Please find below the payment details.

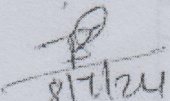
Bill Ref.	Bill Date	Amount
On Account		1,000.00
	Nett Amount	₹ 1,000.00

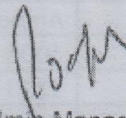
Payment Mode	Transferred to	Payment Details		Amount
		Instrument Details	Issued From	
Cheque		No.: 621235 Dt: 8-Jul-24	Karnataka Bank A/c No. Ca 2	1,000.00
			Total	₹ 1,000.00

Narration : Being chq no 621235 paid to Avinash Chavan for "Intensive Training on Industry Connect & Cutting- Edge Technologies" from 29th July to 2nd August.

Kindly acknowledge the receipt.

Thanking You

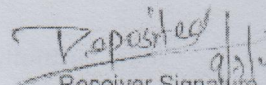

Prepared by


Admin Manager

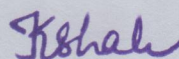
Principal


General Manager


Chairman/Trustee

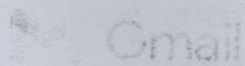

Receiver Signature
Date:
Name:





6/26/24, 12:58 PM

Gmail - Congratulations! Your enrolment request has been accepted.



avinash chavan <avi.d.chavan@gmail.com>

Congratulations! Your enrolment request has been accepted.

1 message

no-reply@234258970.t.sender-sib.com <no-reply@234258970.t.sender-sib.com>
Reply-To: no-reply@sppuedutech.in
To: avi.d.chavan@gmail.com

27 June 2024 at 15:50

Dear Avinash Dattatray Chavan,

Congratulations!

Your enrolment request for MSFDA program **Intensive training on Industry**

Connect & cutting edge technologies has been accepted!

In order to confirm your participation in the program, kindly pay the registration fee within 3 days by clicking the link below

The instructions to be followed is listed herein below:

1. Payment Timeline: Please make your payment within three days of receipt of this email. Please note that your seat will be reserved only on receipt of registration fees.
2. Payment Method: You can choose from a variety of secure payment methods provided on the payment confirmation page.
3. Confirmation Receipt: Upon successful payment, you will receive a payment confirmation receipt, which serves as proof of confirmation for participation.

If you encounter any issues during the payment process or have any questions, our dedicated support team is here to assist you. Feel free to reach out to us at **Email : ganesh.b@msfda.ac.in Contact : 7391000721.**

We look forward to your participation in the program **Intensive training on Industry Connect & cutting edge technologies.** Welcome!

412-B, Bhamburda, Bahirat Patil Chowk, Model Colony,
Shivaji Nagar, Pune, Maharashtra 411016.



या प्रशिक्षण संस्थेसोबत आयोजित करण्यात आलेल्या प्रशिक्षण कार्यक्रमाविषयी माहिती देणारे माहितीपत्रक (Flyers) या मेलसोबत संलग्न करण्यात आले आहे. या कार्यक्रमासाठी आपले महाविद्यालयातून अध्यापकांना नामनिर्देशित करणेच याचेच ही विनंती. या सर्व कार्यक्रमांची रचना करत असताना राष्ट्रीय शैक्षणिक धोरण 2020, त्यामधील मार्गदर्शक सुचना, अपेक्षित बदल यांवर विचार केला गेला आहे. त्यामुळे सदर प्रशिक्षणातील आपला सहभाग ख-या अर्थाने राष्ट्रीय शैक्षणिक धोरणाच्या अंमलबजावणीमधील आपले योगदान असेल.

आपले महाविद्यालय नविन शैक्षणिक धोरणास अनुसरून शिक्षण क्षेत्रात होत असलेल्या परिवर्तनाचा भाग होताना दिसेल अशी आम्हाला आशा आहे. . नोंदणीसाठीची लिंक वा QR कोड पुढीलप्रमाणे

<https://apps.msfsda.ac.in/Home/SignUp>



अधिक माहितीसाठी ऋतुजा तांबे – 8390805381 वा गणेश भिसे – 7391000721 या नंबरवरती संपर्क करावा.

धन्यवाद,
भवदीय

A handwritten signature in black ink, appearing to read 'Suresh Babar'.

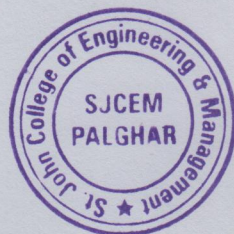
श्री सुरज बाबर

Centre Head - Innovation and cutting edge and technology

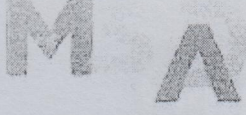
महाराष्ट्र राज्य अध्यापक विकास संस्था, पुणे

महाराष्ट्र राज्य अध्यापक

विकास संस्था, पुणे.



A handwritten signature in black ink, appearing to read 'Kshah'.



Maharashtra State
Faculty Development Academy

+91 72620 79089

msfda.mh@gmail.com

412-B, Bhamburda, Bahirat Patil Chowk,
Medel Colony, Shivajinagar, Pune, Maharashtra 411016

www.msfga.org.in

Sr. No. MSFDA/2024-25/833

दिनांक: -26/06/2024

मा. प्राचार्य

विषय - अध्यापक विकास प्रशिक्षण कार्यक्रमासाठी (Faculty Development Programme: - FDP)
अध्यापकांना नामनिर्देशित करणेबाबत

महोदय,

महाराष्ट्र राज्य अध्यापक विकास संस्थेची (MSFDA) स्थापना भारतीय कंपनी कायदा, २०१३ मधील कलम ८ अन्वये महाराष्ट्र शासनाच्या उच्च व तंत्र शिक्षण विभागाने, अध्यापकांचे प्रशिक्षणासाठी केली आहे हे आपणांस विदित आहे. महाराष्ट्र राज्य अध्यापक विकास संस्थेमार्फत विविध अध्यापक विकास प्रशिक्षण कार्यक्रमांचे (Faculty Development Programme FDP) आयोजन करण्यात येते. यातील काही प्रशिक्षण कार्यक्रमांचे आयोजन महाराष्ट्र राज्य अध्यापक विकास संस्थेमार्फत केले जाते, तर काही प्रशिक्षण कार्यक्रमांचे आयोजन महाराष्ट्रातील अनेक नामवंत शिक्षण संस्था, प्रशिक्षण संस्था, विद्यापीठे यांच्याशी सामंजस्य करार केले आहेत. उपरोक्त विषयास अनुसरून महाराष्ट्र राज्य अध्यापक विकास संस्थेने विश्वकर्मा विद्यापीठ, पुणे यांचे संपुक्त विद्यमाने माहे जुलै - ऑगस्ट मध्ये प्रशिक्षण कार्यक्रम घोषित केला आहे.

या प्रशिक्षण कार्यक्रमांचा तपशिल पुढीलप्रमाणे-

प्रशिक्षणाचे नाव :- Intensive training on Industry Connect & cutting edge technologies

स्थळ :- महाराष्ट्र राज्य अध्यापक विकास संस्था, पुणे

दिनांक :- 29 जुलै - 02 ऑगस्ट 2024

Topics

- Personal branding & Professional networking
- Industry Analysis and business jargon
- Artificial Reality & Virtual Reality
- How to establish industry-academia collaborations
- Use of Design Thinking principles and framework
- Stages of entrepreneurship & Business ideas and opportunities



Intensive training on Industry Connect & cutting edge technologies

Mode: Offline

Online: Intensive

Venue: - MSFDA Pune

TRAINING

29 July to 02 August 2024

Goals

- 1. Empower faculty towards meaningful industry collaboration
- 2. Launch and/or start projects in various fields
- 3. Create new research driven by real industry
- 4. Create a platform for new faculty members to connect with industry

ELIGIBILITY

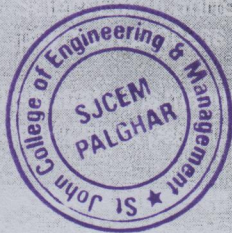
For faculty across all disciplines from higher & technical education institutions

Scope

1. Transformative Research and innovation
2. Free to establish industry-academia collaboration
3. High quality thinking, proposals and projects
4. High quality publications, conferences and projects

Registration procedure

1. Go to website www.msfdaindia.org and click on login button
2. If you have not yet filled up all the information (remember your email & password) - fill up details including personal, institutional profile etc.
3. If you are not getting the email & sms and/or password, you will have to send a request to 29 July 2024 12:00 PM onwards. Email to msfdaindia@msfdaindia.org & phone no. 8390805381 / 7391000721. You will receive a mail with a link to register.
4. Shortlisted candidates will be notified by email for their participation.



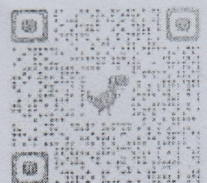
Kishali

Registration Fees: Rs. 1000/- (non-refundable / non-transferable)

Contact person: Manjushree Pratap - VU 9552604417

Ganesh Bhise - MSFDA 8390805381 / 7391000721

• https://x.com/MSFDA_Official/mx-2 / • <https://www.facebook.com/MSFDA.Official/>
• <https://www.linkedin.com/company/msfda/> / • https://www.instagram.com/msfda_official/



Registration Form

ST. JOHN COLLEGE OF ENGINEERING AND MANAGEMENT

(A UNIT OF ALDEL EDUCATION TRUST)

St. John Technical Campus, Vevoor, Manor Road, Palghar (East), District Palghar - 401404, Maharashtra.
Tel.: (02525) 297275/79 Fax : (02525) 256834

Voucher No.

Date 3/07/2014

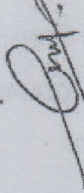
Dr. _____

A/c. _____

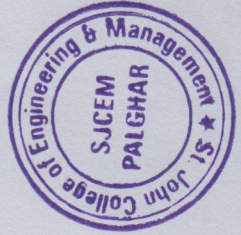
Being the amount paid to <u>Avinash Chavan</u>		
_____ on account of _____		
<u>Training Program Registration Fee.</u>	<u>1000/-</u>	
<u>'Intensive Training on Industry connect & cutting edge Technologies.</u>		
		<u>Rs. 1000/-</u>

Authorised by

Sanctioned by



Receiver's Signature



St. John



Maharashtra State Faculty Development Academy

Online Payment Receipt

Date : 02/07/2024

Office Copy

Program Details : Centre for Innovation and Cutting Edge Technology -> Intensive training on Industry Connect & cutting edge technologies (12) - (29/07/2024 - 02/08/2024)

Application ID : 10565

Name of Applicant : Mr.Avinash Chavan

Transaction ID : 1483692072024142957

Transaction Amount : Rs. 1000.00/-

Transaction Amount In Words : Rs. One Thousand Only

Transaction Result : captured

Transaction Date : 02/07/2024

This receipt is valid subject to realization of the payment instrument.

----- Cut Here -----



Maharashtra State Faculty Development Academy

Online Payment Receipt

Date : 02/07/2024

Applicant Copy

Program Details : Centre for Innovation and Cutting Edge Technology -> Intensive training on Industry Connect & cutting edge technologies (12) - (29/07/2024 - 02/08/2024)

Application ID : 10565

Name of Applicant : Mr.Avinash Chavan

Transaction ID : 1483692072024142957

Transaction Amount : Rs. 1000.00/-

Transaction Amount In Words : Rs. One Thousand Only

Transaction Result : captured

Transaction Date : 02/07/2024

This receipt is valid subject to realization of the payment instrument.



St. John College of Engineering and Management

Autonomous Institute

(A Christian Religious Minority Institution)

Approved by AICTE and DTE, Affiliated to University of Mumbai / MSBTE

DTE Code : 3218 AICTE Permanent ID : 1-4790201

UOE
ALOE

NAAC Accredited with Grade 'A+', Three Programs NBA Accredited

To
CPAC
Kshah

Date : 29.1.2025

To,

The Principal,

St. John College of Engineering & Management,

Palghar.

Subject : Intimation of Paper Selection in India Com-2025 Conference

Respected Sir/Madam,

I am pleased to inform you that my research paper titled "**Adaptive Audio Error Concealment Leveraging BER and PSNR Variability**" has been selected for publication and presentation at **INDIACom-2025; Computing for Sustainable Global Development**, which is technically sponsored by **IEEE Delhi Section**. The conference is scheduled to be held from **02nd - 04th April 2025** at **Bharati Vidyapeeth, New Delhi (India)**.

As per the acceptance notification, the paper will be published in the **Soft Copy Pre-Conference Proceedings (ISBN 978-93-80544-52-6)**, subject to the completion of registration formalities, submission of the **Copyright Transfer Form** and **Certificate of Originality and Confirmation to Attend the Conference**. Additionally, only those papers presented during the conference will be submitted to **IEEE Xplore** for publication and indexing.

I wanted to formally share this achievement with the institution and express my gratitude for the support and encouragement provided by the college.

I have attached the acceptance letter and relevant details for your reference.

Thank you ma'am for your constant support and motivation.

Thank you

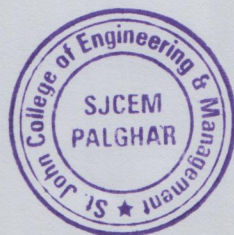
Yours sincerely,

Mrs. Subhasini Shukla

ECS/F.Tech Department

SJCEM

CPAC will
reimburse as
per policy
S. Kshah
6.2.25



Kshah



Q india



Compose

Inbox

15,066

Starred

Snoozed

Important

Sent

Drafts

87

Categories

More

Labels

Boxbe Waiting L...

1,377

More

INDIACom-2025: Review Notification for Paper ID - 941

Inbox x

INDIACom-2025 <indiacom@bvicam.in>
to vaagar, me

Tue, Jan 21, 11:53 AM (8 days ago)

Dear Prof. / Dr. / Ms. / Mr. Subhasini Shukla,

Congratulations!

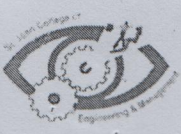
The reviews of your paper ID: 941 entitled: Adaptive Audio Error Concealment Leveraging BER and PSNR Variability are now complete and it is our pleasure to inform you that the consensual decision of the Technical Programme Committee (TPC) is to accept the above mentioned paper for presentation in INDIACom-2025, Computing for Sustainable Global Development, technically sponsored by IEEE Delhi Section, scheduled to be held during 02nd -04th April, 2025 at Bharati Vidyapeeth, New Delhi (INDIA) and publication in the Soft Copy Pre - Conference Proceedings having ISBN 978-93-80544-52-6 serials.

This acceptance is subject to completion of the registration formalities of at-least one of the authors in the applicable category, the signed copy of the Copyright Transfer Form available at http://www.bvicam.ac.in/indiacom/Downloads/Copyright_Transfer_Form.pdf and the Certificate of Originality and Confirmation to Attend the Conference available at http://www.bvicam.ac.in/indiacom/Downloads/Certificate_of_Originality_and_Confirmation_to_attend_the_Conference.pdf. Registration Form and other details can be downloaded from http://www.bvicam.ac.in/indiacom/Downloads/Registration_Form_for_INDIACom.pdf and the payment modes can be viewed at http://www.bvicam.ac.in/indiacom/Downloads/Payment_Mode.pdf.

Kindly note that Registration Fee covers processes related to Conference Organization and Hospitality. All publications (Soft Copy / IEEE) as per applicable date and pre-notified policy, are free of cost.



Shikha



St. John College of Engineering and Management

Autonomous Institute

(A Christian Religious Minority Institution)

Approved by AICTE and DTE, Affiliated to University of Mumbai / MSBTE

DTE Code : 3218 AICTE Permanent ID : 1-4790201

NAAC Accredited with Grade 'A+', Three Programs NBA Accredited

Date : 29.1.2025

To ,

The Principal,

St. John College of Engineering & Management,

Palghar.

Subject : Intimation of Payment Confirmation for INDIACom-2025 Conference

Respected Sir/Madam,

I am pleased to inform you that my research paper titled "Adaptive Audio Error Concealment Leveraging BER and PSNR Variability" has been selected for publication and presentation at **INDIACom-2025; Computing for Sustainable Global Development**, which is technically sponsored by **IEEE Delhi Section**. The conference is scheduled to be held from **02nd - 04th April 2025** at **Bharati Vidyapeeth, New Delhi (India)**.

As per the acceptance notification, the paper will be published in the **Soft Copy Pre-Conference Proceedings (ISBN 978-93-80544-52-6)**, subject to the completion of registration formalities, submission of the **Copyright Transfer Form** and **Certificate of Originality and Confirmation to Attend the Conference**. Additionally, only those papers presented during the conference will be submitted to **IEEE Xplore** for publication and indexing.

Further, I would like to inform you that I have completed the payment for the conference registration. The details of the payment are as follows:

Order No.: 5370

Payment Amount: 8000.00/-

DD / Transaction No.: ZKBLMV70BNEECV

Payment Date: 27-01-2025 15:33:47

I wanted to formally share this achievement with the institution and express my gratitude for the support and encouragement provided by the college.

I have attached the payment confirmation, and other relevant details for your reference.

Thank you, ma'am, for your constant support and motivation.

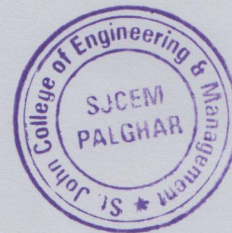
Thank you

Yours sincerely,

Mrs. Subhasini Shukla

ECS/F.Tech Department

SJCEM





Q india



Compose

Inbox 15,066

Payment Status Update

Inbox x



INDIACom - 2025 <indiacom@bvicam.in>
to me

Mon, Jan 27, 3:35 PM (2 days ago)

Important

Dear Prof. / Dr. / Ms. / Mr. Subhasini Shukla,

Sent

Drafts 87

Thank you for your interest in INDIACom.

Categories

More

We hereby acknowledge, the details of your payment, given hereunder, as submitted by you:-

Order No. : 5370
Payment Amount : 8000.00/-
DD / Transaction No. : ZKBLMV70BNEECV
Payment Date : 27-01-2025 15:33:47

Labels

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
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Adaptive Audio Error Concealment Leveraging BER and PSNR Variability

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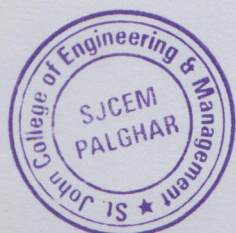
Abstract— In the sequential recovery framework, missing audio samples from transmitted G.723.1 codec data are sequentially reconstructed using adaptive Error Concealment (EC) techniques. The flexibility of this adaptive EC predictor enables the recovery of significant audio features, ensuring superior quality reconstruction. The proposed method consistently achieves Peak Signal-to-Noise Ratio (PSNR) values as high as 38.11 dB at low Bit Error Rate (BER) levels, whereas existing techniques exhibit significant variability, with PSNR values dropping to 22.47 dB at higher BER levels. This paper explores various EC approaches applied in audio codecs, analyzing their strengths, limitations, and associated research gaps. Finally, the study provides a comprehensive review and analysis of current approaches, highlights critical research challenges, and suggests actionable solutions to advance the state of resilient audio transmission systems.

Keywords— Audio Compression, Audio Reconstruction, Error Concealment, Bit Error Rate, Peak Signal-to-Noise Ratio, G.723.1 Codec, Adaptive Post Processing

I. Introduction

Integrating visual and acoustic data is essential for improving robustness in audiovisual communication systems, particularly in noisy settings. This work builds on existing research by leveraging adaptive audio error concealment techniques that utilize metrics like BER and PSNR variability. By employing low-level acoustic features such as Linear Predictive Coding (LPC) and Mel-Frequency Cepstral Coefficients (MFCC), the method dynamically adjusts to transmission errors, addressing challenges like noise and variability in speaker conditions. The findings align with prior studies emphasizing the complementary nature of audio and visual modalities, further improving the reliability and quality of audiovisual communication systems in adverse conditions [1]. In diagnostic imaging, and especially during the interpretation of ultrasounds of patients with polycystic ovarian syndrome (PCOS), it is essential to decrease the level of noise present in the images. Expanding on techniques further, this work examines the problem of noise using a fractional Fourier transform which is advanced to a one-stage manner and integrated with Visual Geometry Group (VGG)-16 model. These methods result in better images through the

filtration properties of the fractional Fourier transforms and the feature extraction based on deep learning using VGG-16. The solution has the potential to deal with the issues of noise and variation in the imaging environment and therefore complements the objectives of enhancing the consistency and precision of multimodal data systems such as self-adaptive error concealment for audio in communication systems [2]. Environmental elements like distance and reverberation time have a big influence on speech recognition system performance. This work analyses these parameters in detail, noting the effect they have on quality and acoustic data. By observing how distance and reverberation times worsen the speech signal, the work reinforces the necessity of techniques for overcoming such problems. Such principles are also known to be the goals in multimodal systems where solutions of a more resilient nature such as enhanced adaptive audio error concealment make use of variations of measures such as BER and PSNR to improve the data and the system's working under unfavorable conditions [3]. The forensic quality of audio verification is of utmost importance, especially for legal and security context. This paper investigates the performance of an audio verification tool based on a lightweight Deep Neural network (DNN), which claims self-sufficiency in confirming the identity of a person from a voice recording. Since deep learning models have been utilized the procedure copes well with speech signal diversity improving the accuracy and performance of audio verification systems. Such results are consistent with trends in multi-modal audiovisual systems that use, among others, adaptive audio error concealment to optimize system operation in the presence of noise and distortion [4]. Noise-corrupted and enhanced speech should be handled in speaker recognition systems to obtain accurate identification and verification. The work is on an approach using fusion features along with a Convolutional Neural Network (CNN) for better performance. The method is able to combine diverse acoustic features to enhance the robustness of the system against noise and variability in speech conditions. The CNN is used for feature extraction and classification, addressing environmental distortions that are usually encountered. This matches the adaptive audio error



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concealment techniques that make use of variability in metrics like BER and PSNR to preserve the quality and reliability of audiovisual systems even when faced with hostile environments [5]. Leveraging techniques like deep learning, multimodal data fusion, and adaptive feature extraction, these studies address issues such as noise and variability. They emphasize preserving data quality and reliability through metrics like BER and PSNR, offering valuable insights for future innovations.

II. LITERATURE REVIEW

The growing need for dependable audio transmission in low-powered devices has spurred advancements aimed at greater BER and PSNR. In real-time situations, Causal Convolutional techniques achieve low BER by efficiently addressing packet loss. Using representation learning to improve PSNR, Contrastive Learning PLC (Packet Loss Concealment) further improves audio reconstruction. Scalability and efficiency are given priority in hybrid neural designs, which allow for high-quality speech coding with lower BER and higher PSNR. A sophisticated contrastive learning-based packet loss concealing technique. Enhancing BER and PSNR in audio communication systems is the main goal of this method. In contrast to conventional techniques, it improves PSNR by using representation learning to restore lost audio packets. Contrast-PLC successfully lowers BER under packet loss scenarios while improving PSNR by about 2-3 dB over baseline techniques. This technique ensures high-quality audio performance even in network settings that are limited, which is especially advantageous for real-time applications [6].

The Error Concealment Methods for High Resolution Audio signals are utilizing Temporal Memory Generative Adversarial Networks (TMGAN-PLC) enhances the accuracy of audio reconstruction by selecting the most relevant features for packet loss handling. However, its applicability in real-time environments remains limited, and further work is needed to address burst loss and fuzzy-based parameter handling [9]. Another approach, based on phase correction and deep neural networks, refines the phase recovery process with fuzzy logic to adjust for packet loss severity, but faces challenges related to computational complexity [10]. Additionally, a Simplified Residual Network method optimizes decision-making for packet loss recovery, improving PSNR by selecting the best concealment strategies. Despite these advantages, the innovative audio coding standard brings promise of enormous bandwidth savings of approximately 40 % over G.723 encoded content with similar quality. Interpolation and Adaptive Post-Processing are the best EC techniques for G.723.1 audio codec with variation in BER and PSNR., reasoning for real-time applications still requires development, particularly to handle complex loss patterns and high-error environments [11]. Hybrid intelligent systems combining fuzzy logic and neural networks have been effective in audio codec error concealment. Performance parameters like Signal-to-Noise Ratio (SNR) and Bit Error Rate (BER) are

used to aid fuzzy reasoning in concealment. However, in some situations, fuzzy logic might not produce reliable results on its own. Neural networks improve this by calculating weights to optimize parameter choices. Error concealment in audio codecs is made more accurate and effective by this combination method.

Packet Loss Concealment strategies are essential for reliable audio transmission with low-bit-rate codecs such as G.723, which has trouble preserving speech quality when packet loss occurs. For error hiding, interpolation, adaptive post-processing, phase correction, codebook analysis, and frame fusion are essential. These methods evaluate spectral properties and pitch continuity by comparing neighbouring voice frames. Missing value estimation is aided by interpolation, and network flaws are corrected by adaptive post-processing, which improves signal quality. Speech reconstruction is enhanced using adaptive PLC techniques in successive packet loss scenarios. In order to optimize these techniques for intricate loss patterns, there are still research gaps. The entire frame may be lost in some situations. In these situations, adaptive error concealment is necessary.

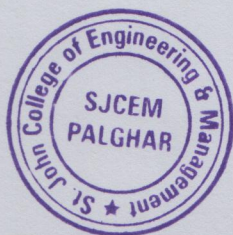
III. ERROR CONCEALMENT IN AUDIO CODEC OUTCOME OF THE REVIEW

Error Concealment (EC) has been the subject of numerous studies aimed at improving audio communication performance measures. Although many EC techniques have been developed, they are usually adapted to certain audio codecs. When using EC methods, the underlying codec stays the same. To preserve performance, however, matching adjustments to the EC methods are required whenever the audio codec is upgraded.

A. Obtaining Research Objectives

The innovation focuses on improving error concealment (EC) techniques for the G.723.1 audio codec and upgrading the baseline codec. While prioritizing robust EC approaches, future plans should also include compatibility with state-of-the-art audio compression standards. For low-bit-rate audio, G.723.1 is a suitable framework since it prioritizes error correction over compression to maintain high audio quality. In order to choose the best EC techniques based on preliminary training, the system needs possess intelligent decision-making abilities. Additionally, it should track relevant indicators during reconstruction to enhance EC methods. By using artificial neural networks, adaptive weight training will be possible, which will dynamically update itself while being performed. These developments are meant to guarantee smooth audio reconstruction even under difficult circumstances. The Research objectives of the proposed work can be listed as follows:

- Set up ANN weights to incorporate sophisticated adaptive error-hiding strategies
- To enhance EC decision-making, look into



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- temporal and spectral characteristics.
- Develop new adaptive EC algorithms for low-bit-rate audio.
- Design a simulated channel to generate realistic packet loss for validation.
- Ensure compatibility with real-world applications like VoIP and streaming.
- Install the system on portable or mobile devices to verify users.

B. Adaptive Error Concealment

Ongoing research for the G.723.1 audio codec is to optimize error hiding approaches by utilizing artificial intelligence. Neural networks and fuzzy reasoning are used to speed up decision-making. Through the integration of fuzzy inference and learning algorithms with a multi-layered neural network, the system improves the choice of appropriate error concealing techniques. When using fuzzy reasoning to determine the best EC algorithm for recovering lost or corrupted audio data, the link between spectral and temporal information is helpful. The adaptive error concealment process dynamically selects techniques such as, Frame Erasure, Repeat Last Good Frame, Comfort Noise Insertion, Interpolation, Packet Loss Concealment Adaptive Post-Processing, and ensuring robust audio quality even in challenging network conditions.

C. Proposed Methodology

The research describes a methodical way to create and assess an adaptive audio error concealing strategy with G.723.1 serving as the standard codec. The technique advances digital communication by improving robustness against changing network conditions through the integration of ANN and fuzzy reasoning. The proposed research, as shown in Fig.1, incorporates Artificial Intelligence by integrating neural networks and fuzzy reasoning into the error concealment (EC) process, enhancing speed and accuracy. Uncompressed audio signals are sent over a system that mimics different channel circumstances, including noisy or noise-free channels. Adjustable bit rates, including fixed and variable rates with different error tolerances, give the system flexibility. The efficiency of decision-making is increased via fuzzy inference and learning algorithms powered by a multi-layered neural network.

Implementing this methodology with variations in Bit Error Rate (BER) will generate confusion matrix predicting Peak Signal-to-Noise Ratio (PSNR) values for different EC techniques, identifying the technique yielding the best PSNR for a given scenario. The basic guideline to implement the proposed EC algorithms is as follows:

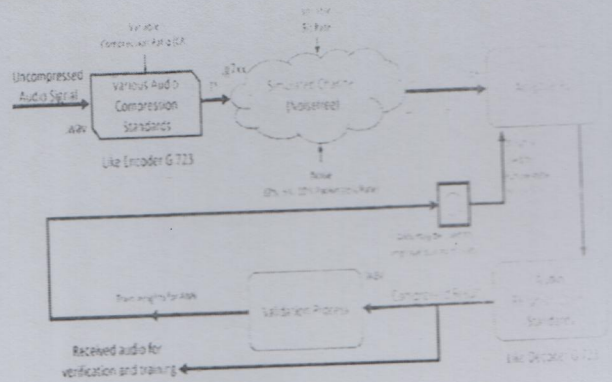


Fig.1. Proposed Methodology for Audio Error Concealment

- G.723.1 Baseline codec implementation
- Partition-Based Reconstruction Using Weighted Features using Mahalanobis distance calculation.
- Feature-Based Average Interpolation.
- Voting-Based Feature Selection
- Temporal and Spectral Priority-Based Reconstruction.

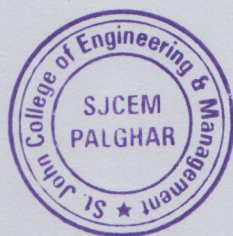
The steps involve for implementing G.723.1 Baseline codec are as follows:

Encoder:

- Setting input parameters: start/end Frame, Block size, subframe size.
- Read .wav or raw PCM format.
- Linear Prediction Encoding Process:** A high-pass filter removes DC offset, followed by segmentation into 240-sample frames with 60-sample overlap. LPC coefficients are derived and quantized using LSFs. Pitch lag and gain are estimated for voiced frames, and excitation is generated using adaptive and fixed codebooks.
- Quantization and Coding:** LPC coefficients, pitch gain, and excitation parameters are quantized and compressed into a .bit file.

Decoder:

- Load the transmitted original bitstream.
- Load the original .wav audio file for BER and PSNR calculation.
- Decode header information: sampling rate, frame size, bit rate, and frame mode.
- Set Average Burst Length and Packet Loss Rate. Simulate channel errors using a Markov channel model. Generate Error Matrix for lost frames, and switch to [Error Concealment algorithms].
- Decode audio frames: Reconstruct LPC coefficients, pitch gain, and excitation using adaptive/fixed codebooks. Perform LPC synthesis for audio reconstruction.
- Apply post-processing filters (e.g., pitch and formant filters).
- Return reconstructed frames and repeat step 5 for remaining frames.



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8. Compute BER and PSNR for reconstructed frames, and calculate average PSNR and execution time.

The first step involves generating missing or errored audio frames based on adjoining and surrounding audio samples, weighted by their temporal proximity [13]. According to the encoding process, audio frames within the same segment should maintain similar spectral characteristics. Therefore, frames belonging to the same estimated segment are forced to have similar patterns to ensure continuity [16]. Spectral features, including frequency and amplitude, are calculated for each missing frame. The reconstruction process relies on neighboring frames from close time intervals. Each missing frame's features are derived from surrounding frames, ensuring smooth audio recovery. This approach minimizes distortion while maintaining high quality, as evaluated using BER and PSNR metrics.

Let us consider the proposed method in mathematical form for audio error concealment in the G.723.1 codec. Suppose the missing audio segment consists of N frames. The surrounding M frames are represented as f_k , where $k=1:M$, with corresponding spectral coefficients S_k and temporal features T_k . Let $f_{i,j}$ represent the missing frame at position i,j where $i=1:N$. The spectral and temporal features for each missing frame $S_{i,j}$ and $T_{i,j}$ to be estimated. The contributing weight $\beta_k^{i,j}$ for each neighboring frame is calculated based on its relative contribution. The reconstructed spectral and temporal features for the missing frame are shown in (1) and (2).

$$S_{i,j} = \sigma_{i,j} \sum_{k=1}^M \beta_k^{i,j} S_k \quad (1)$$

$$T_{i,j} = \sigma_{i,j} \sum_{k=1}^M \beta_k^{i,j} T_k \quad (2)$$

where $\sigma_{i,j}$ is a normalization factor to ensure the weights sum to 1 as mention in (3).

$$\sigma_{i,j} = \frac{1}{\sum_{k=1}^M \beta_k^{i,j}} \quad (3)$$

Evaluation Metrics: BER and PSNR

The quality of the reconstructed audio is evaluated using Bit Error Rate (BER) and Peak Signal-to-Noise Ratio (PSNR).

1. Bit Error Rate (BER)

BER measures the ratio of incorrectly reconstructed bits to the total bits in the audio segment as shown in (4).

$$BER = \frac{\text{Number of erroneous bits}}{\text{Total bits}} \quad (4)$$

2. Peak Signal-to-Noise Ratio (PSNR)

PSNR evaluates the quality of the reconstructed audio by comparing it to the original audio as mention in (5)

$$PSNR = 10 \log_{10} \frac{MAX^2}{MSE} \quad (5)$$

where MAX is the maximum possible value of the audio signals. (Mean Squared Error) is calculated as shown in (6).

$$MSE = \frac{1}{N} \sum_{i=1}^N (x_i - \hat{x}_i)^2 \quad (6)$$

Here, x_i represents the original audio sample, and \hat{x}_i represents the reconstructed audio sample.

This method focuses on BER and PSNR optimization to guarantee precise and aesthetically acceptable audio reconstruction. In G.723.1 codec settings, the technique reduces bit errors and preserves audio quality while ensuring dependable frame recovery.

IV. EXPERIMENTAL RESULTS

This section examines the results of various error concealment (EC) techniques applied to reconstructed audio signals in G.723 codec environments. The Adaptive Post Processing method is compared to other EC methods under different bit error rate (BER) scenarios. The G.723 codec was chosen for its suitability in low-bit-rate audio transmission. MATLAB® 2024b was used to simulate and initialize the experimental setup, applying systematic bit errors for fair comparisons.

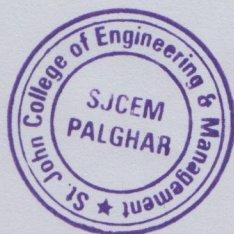
Realistic conditions were simulated with BER values of 2%, 5%, 10%, 20%, and 40%. At each BER, concealed audio samples were compared to the original uncompressed audio using PSNR to assess reconstruction quality at compression ratios (CR) of 20%, 40%, 60%, 75%, and 80% as shown in Fig. 2. The compression ratio (CR) in audio signal processing quantifies the amount of data reduction achieved during compression. The results are analyzed in two cases.

Case 1

The comparative results for different scenarios are illustrated in Fig.2, including the original uncompressed audio signal, the errored audio signal at a BER of 0.10, and concealed signals processed using Adaptive Post-Processing and the Repeat Last Good Frame method at various CR values.

Case 2

Simulations utilizing the uncompressed audio file FEC_27.wav evaluated six error concealment techniques under varying BER conditions. The techniques were assessed based on PSNR values to determine their effectiveness in achieving optimal reconstruction quality.



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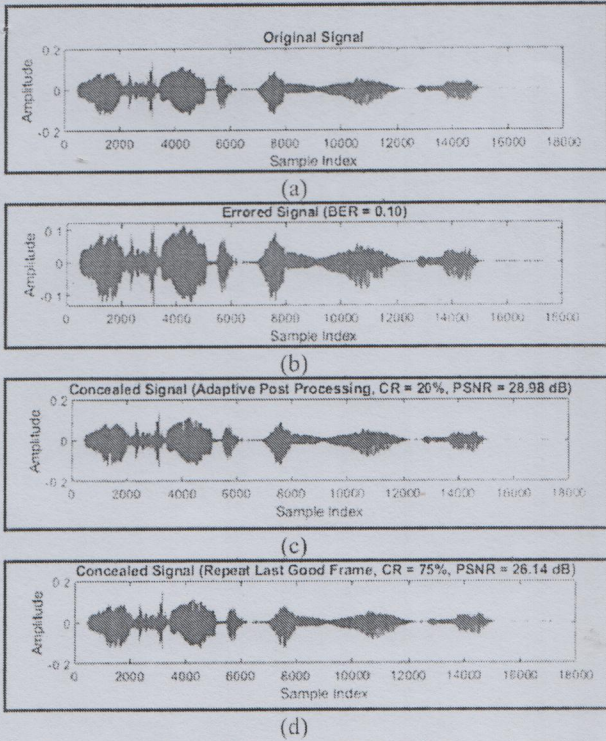


Fig. 2. (a) Original audio Signal (b) Error audio Signal (c) Concealed Signal APP with CR =20% and PSNR =28.98 db. (c) Concealed Signal APP with CR =75% and PSNR=26.14 db.

A comparative analysis of their performance is presented in Fig. 3. The results demonstrate the trade-off between compression efficiency and reconstruction quality, highlighting the performance of the adaptive error concealment techniques.

A. Comparison of EC Techniques

The PSNR performance of various error concealment techniques across different BER levels is illustrated in Fig. 4. Adaptive Post-Processing and Repeat Last Good Frame emerge as the most effective methods for maintaining audio quality under varying error conditions. The PSNR values for all error concealment techniques are shown in Fig.4, providing a detailed comparison of their performance under varying conditions.

The comparison of PSNR values across various error concealment techniques and BER levels highlights Repeat Last Good Frame as the most effective, achieving a PSNR of 38.11 dB at BER 0.02. Adaptive Post Processing also performs well at lower BERs but shows a decline as the error rate increases.

B. Best EC Technique with highest PSNR value

The performance of several error concealment (EC) strategies under various Bit Error Rate (BER) scenarios was assessed using confusion matrices. These matrices demonstrate the robustness and efficacy of each technique by clearly visualizing its

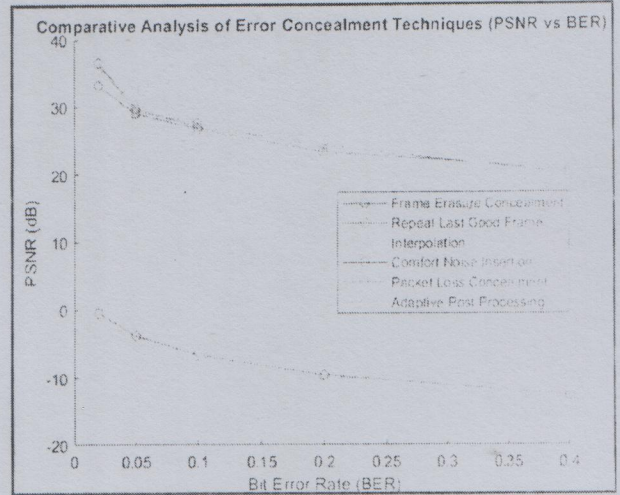
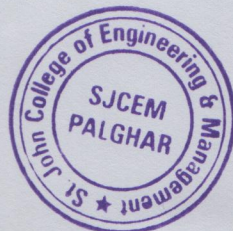


Fig. 3. Comparative Analysis of Various EC Techniques

BER Values	BER=0.02	BER=0.05	BER=0.10	BER=0.20	BER=0.40
Frame Erasure Concealment	32.1	31.25	38.11	29.9	30.45
Repeat Last Good Frame	30.5	29.85	33.46	28.2	29.1
Interpolation	27.85	26.9	29.5	24.3	25.5
Comfort Noise Insertion	25.2	24.1	26.07	22.7	23.2
Packet Loss Concealment	22	21.3	22.47	19.8	20.5
Adaptive Post Processing	22	21.3	22.47	19.8	20.5

Fig. 4. Comparison of EC Techniques with PSNR values

capacity to sustain average PSNR values under various BER situations. A comparison of these methods is shown in Fig. 5 and 6, which also indicate how well they perform in terms of PSNR under particular fault scenarios. The graphic illustrates which techniques provide better reconstruction quality and provides information about how well they work with different transmission error levels. This thorough analysis helps determine the best EC method for achieving optimal audio signal recovery. Additionally, the findings highlight the trade-offs involved in choosing an EC strategy, balancing reconstruction quality with computational efficiency. Such insights can guide future research and practical implementations in error-prone transmission environments. The performance of error concealment (EC) approaches was evaluated under a range of bit error rate (BER) settings, as shown in Table II. Peak Signal-to-Noise Ratio (PSNR) was used as the metric in the study to assess the reconstruction quality of audio signals using the G.723 codec.



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TABLE I. Comparative Analysis of EC with PSNR vs BER

Sr.No.	BER (%)	Best EC Technique	PSNR
1	0.02	Interpolation	38.11
2	0.05	Interpolation	33.46
3	0.10	Adaptive Post Processing	29.50
4	0.20	Adaptive Post Processing	26.07
5	0.40	Interpolation	22.47

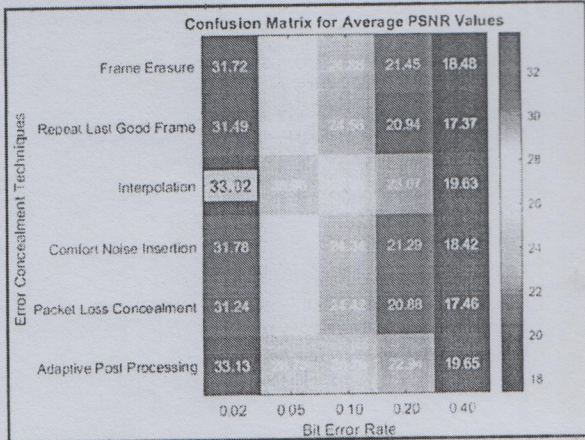


Fig. 5. Confusion Matrix for Average PSNR values optimized for 33.82 dB.

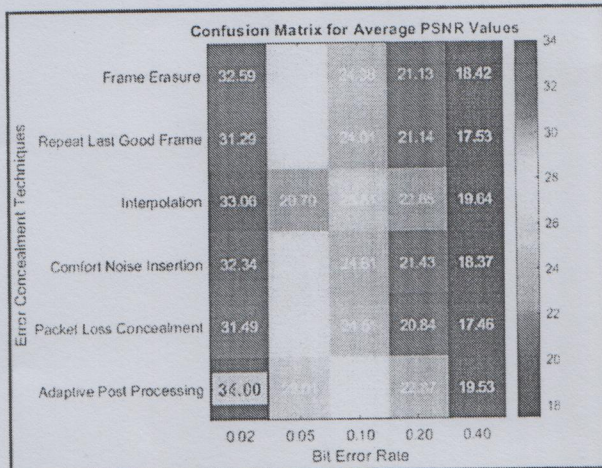


Fig. 6. Confusion Matrix for Average PSNR value optimized for 34.00 dB

In order to compare the interpolation and adaptive post-processing algorithms, typical error scenarios with BER levels of 0.02%, 0.05%, 0.10%, 0.20%, and 0.40% were used.

The results highlighted the effectiveness of these methods in maintaining audio quality under challenging transmission conditions. The best error concealment techniques for varying BER levels, as shown in Table I,

reveal that Interpolation performs best at low BERs (38.11 dB at 0.02%), while Adaptive Post-Processing excels at moderate BERs, maintaining higher PSNR values effectively.

The best methods are found to be interpolation and adaptive post processing, which produce PSNR values of 33.82 dB and 34.00 dB, respectively, as shown in Fig. 5 and 6. However, their performance varies depending on the situation, highlighting the need for methods like fuzzy logic and artificial neural networks (ANN) to provide reliable and flexible error hiding

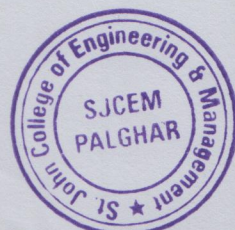
V. CONCLUSION

This study used Adaptive Error Concealment for audio codecs under PSNR changes and BER for the core thesis of this work. The analysis shows the shortcomings of current EC techniques because they result in erratic performances with changes in PSNR levels and BER. For example, Adaptive Post Processing works well in mid-BER scenarios of 0.10 and 0.20, with accuracies of 77.38% and 68.39%, respectively. Interpolation, however, works well at lower BERs like 0.02 and 0.05, with accuracies of 100% and 87.79%, respectively. However, interpolation remains the best alternative at higher BERs such as 0.40 but with a lower accuracy of 58.96%. Thus, it appears that a more adaptive and consistent EC approach should be applied. In addition, the study of the Confusion Matrix (Figs. 5 and 6) explains that the available EC techniques nowadays are highly sensitive to BER scenarios, which tend to give varying outcomes.

This enhances the need for a comprehensive solution that can dynamically adapt to different error cases. This work proposes an AI-driven Adaptive Error Concealment (EC) technique designed specifically for the G.723X codec to address these gaps. The method makes use of fuzzy reasoning and neural networks to enhance decision-making and accelerate execution. Overall, the proposed approach goes beyond the inaccuracies found in the existing methods because it provides a more consistent PSNR value in all test cases, superior to the EC strategies available to date.

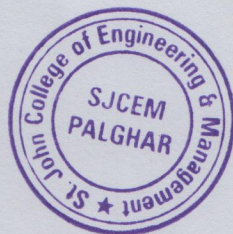
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Kishan



Statement Generated for the period : 13-May-2025 - 13-May-2025

A/c Number 6272000100000201	Branch Details
Name ST JOHN COLLEGE OF	Branch Name PALGHAR
Address ST JOHN TECHNICAL CAMPUS, VILLAGE VEVOOR MANOR ROAD, PALGHAR EAST PALGHAR W- DT.THANE 401404 MAHARASHTRA	Branch Address ST JOHN COM Cmplx,Syno 52/1 VEVOOR-MANOR ROAD PALGHAR W-DT.THANE
Phone 9987684193	Phone 9145488893
Email ACCOLUNTS@SJCEM.EDU.IN	Email palghar@kttbank.co
UPI ID ELVINA DSOUZA, ALBERT W DSOUZA	MICR 400052030
Joint Holders	IFSC Code KARB00000627

Date	Description	Chq/Ref No	Withdrawals	Deposits	Balance
13-05-2025	TRANSFER-SUBHASINI SHIVAM SHU-TO SUBHASI-KBL-PALG	853720	17,579.00		43,17,738.36
				Closing Balance	43,17,738.36

Subhash



This is system generated. Signature not required



ASSOCIATION OF
CONSULTING CIVIL
ENGINEERS (INDIA)

ACCE(I)
natcon 2024
NATIONAL CONVENTION OF CIVIL ENGINEERS



AI & INNOVATION

16TH & 17TH AUGUST 2024

MUMBAI

St. John College of Engineering And Management (24-25)

St. John Technical Campus, Village Vevoor,
Manor Road, Palghar (East), Dist. Palghar,
Maharashtra-401404
State Name : Maharashtra, Code : 27
E-Mail : office@sjcem.edu.in

Bank Payment Voucher

M/s. Faculty Training & Develop. Expenses

Voucher No: BPV/SJCEM/24-25/10/078
Date : 15-Oct-24

Dear Sir/Madam,

Please find below the payment details.

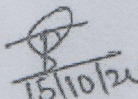
Bill Ref.	Bill Date	Amount
On Account		4,130.00
	Nett Amount	₹ 4,130.00

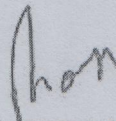
Payment Mode	Transferred to	Instrument Details	Issued From	Amount
Cheque		No.: 081511 Dt: 15-Oct-24	Karnataka Bank A/c No. Ca 2	4,130.00
			Total	₹ 4,130.00

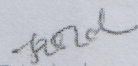
Narration : Being chq no 081511 reimbursed to Dr. Buddharatna J Godbole Associate Professor & HOD of Civil Engineering Department for 50% of registration fee of NATCON 2024, Event held on 16th to 17th August 2024.


Kindly acknowledge the receipt.

Thanking You



15/10/24
Prepared by

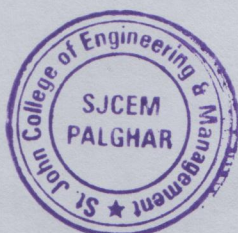

Admin Manager

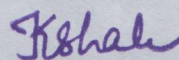

Principal


General Manager


Chairman/Trustee


Receiver Signature
Date: 25/10/24
Name: Dr. B.J. Kshirsagar





To Box File
Chairman's Approval

2

College of Engineering and Management
Autonomous Institute
(A Christian Religious Minority Institution)
Approved by AICTE and DTE, Affiliated to University of Mumbai - MSBTE
DTE Code: 3218. All Government ID: 1-4790201
NAAC Accredited with Grade 'B', Three Programs NBA Accredited

Date: 12/07/2024

To,
The Principal
SJCEM, Palghar

50% can be given
from FBP
Budget
Bhal
23/7/24

Subject: Application for registration for NATCON 2024 [National Convention of Civil Engineers], Event Date 16th to 17th August 2024

Respected Madam,

I am writing to apply for registration to attend the NATCON 2024, the National Convention of Civil Engineers, organized by ACCE(I). This event promises to be a significant opportunity for knowledge enrichment, focusing on the integration of AI and innovation within the construction industry. NATCON will provide a global perspective on the future of civil engineering, with distinguished experts sharing their insights and experiences.

I am keenly interested in attending this event to enhance my understanding of the latest trends in AI and its applications in our field. Therefore, I kindly request your approval for my registration and some financial assistance to cover the registration fee of Rs. 8260 (including GST).

Thank you for considering my application.

Sincerely,

[Signature]
12/07/2024

Dr. Buddharatna J Godbole
Associate Professor & HOD
Employee Code:666
Department of Civil Engineering
SJCEM Palghar

Take Mr. Shreevil
too

[Signature]

To
All make apul/DD & adjust amount
with faculty
Bhal

Kishal



Both faculty should go together for availing the benefit of sponsorship as per guideline discussed with faculty prior.

50% can be reimbursed to Kishal Buddharatna Godbole as

TAX INVOICE



MAKEMYTRIP (INDIA) PRIVATE LIMITED
19th Floor, Epitome Building No.5,
DLF Cybercity, DLF Phase III,
Gurgaon, Haryana, 122001

Booking ID
NF2AAP2L42001773012

PAN
AADCM5146R

Invoice No.
M06AI25113263865

HSN/SAC
998551

Date
21 Oct 2024

GSTIN
06AADCM5146R1ZZ

Place of Supply
Maharashtra

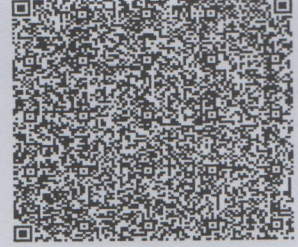
CIN
U63040HR2000PTC090846

Transactional Type/Category
B2B/REG

Service Description
**Reservation Services For Air
Transportation**

Transactional Details
RG

Tax Payable under RCM
No



IRN Number
12e5adfcc59b51a914bba24d7d3c79e043b30e9923755916cfd5be53ac397c

Company Legal Name
**ALDRIDGE DOMINIC
DSOUZA**

Company Trade Name
MADONNA TRAVELS

Customer Name
**Buddharatna
Janbarao Godbole**

Customer GSTIN
27BQLPD9855J1Z7

Booked By

Customer Address
1, VEVOOR,MANOR ROAD,PALGHAR EAST,Thane , Maharashtra - 401404

BOM-NAG (22 Oct 2024)			NAG-BOM (24 Oct 2024)		
Passenger Name(s)	Ticket No.	PNR	Passenger Name(s)	Ticket No.	PNR
Buddharatna Janbarao Godbole	NU37QF	NU37QF	Buddharatna Janbarao Godbole	PSIGUL	PSIGUL

PAYMENT BREAKUP

*Fare Charges (including applicable flight taxes collected on behalf of airline & other ancillary charges)	₹23447.0
Service Fees	₹689.83
IGST @18%	₹124.17
Grand Total	₹24261.0

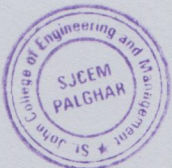
Input tax credit of GST charged by the original service provider is available only against the invoice issued by the respective service provider. MakeMyTrip acts only as a facilitator for these services.

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- Any dispute with respect to the invoice is to be reported back to MMT/GOIBIBO within 48 hours of receipt of invoice.
- QR code for B2B and SEZ category invoices can only be scanned using app downloaded from the link <https://einvoice1.gst.gov.in/Others/QRCodeVerifyApp>
- This is system generated invoice and does not require signatures.

This document is digitally signed



Kishan
Principal

**AET's St. John College of Engineering and Management
St. John Technical Campus
Vevoor, Manor Road, Palghar (E)
Dist. Palghar - 401 404.**

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Mon, Oct 21, 2024 20:08:39 IST
Haryana HR
Invoice Generated