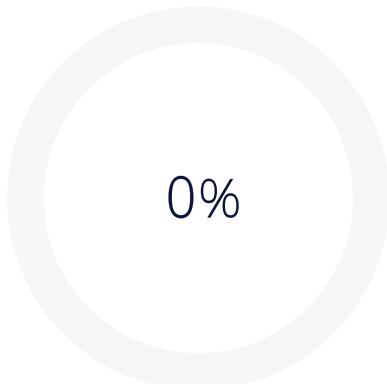


Analysis Report

Plagiarism Detection and AI Detection Report

Proposallsha.docx

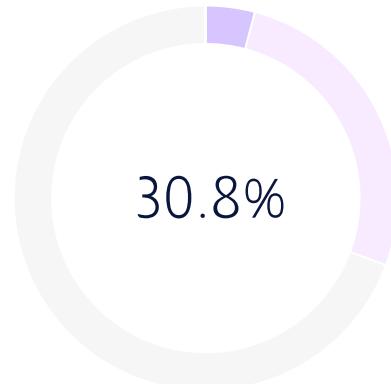
Plagiarism Detection



Plagiarism Types

	Text Coverage	Words
Identical	0%	0
Minor Changes	0%	0
Paraphrased	0%	0
<hr/>		
Excluded		
Omitted Words		0

AI Detection



Text Coverage

	Text Coverage	Words
AI Text	30.8%	2,967
Low Frequency		398
Medium Frequency		0
High Frequency		9
Human Text	69.2%	1,718
<hr/>		
Excluded		
Omitted Words		0

Plagiarism

0%

Results (0)

*Results may not appear because the feature has been disabled.

 Repository	 Internal Database	 Filtered / Excluded
0	0	0
 Internet Sources	 AI Source Match	 Current Batch
0	0	0

Plagiarism Types	Text Coverage	Words
 Identical	0%	0
 Minor Changes	0%	0
 Paraphrased	0%	0
Excluded		
 Omitted Words		0

About Plagiarism Detection

Our AI-powered plagiarism scans offer three layers of text similarity detection: Identical, Minor Changes, and Paraphrased. Based on your scan settings we also provide insight on how much of the text you are not scanning for plagiarism (Omitted words).

Identical

One to one exact word matches. [Learn more](#)

Minor Changes

Words that hold nearly the same meaning but have a change to their form (e.g.“large” becomes“largely”). [Learn more](#)

Paraphrased

Different words that hold the same meaning that replace the original content (e.g. ‘large’ becomes ‘big’) [Learn more](#)

Omitted Words

The portion of text that is not being scanned for plagiarism based on the scan settings. (e.g. the ‘Ignore quotations’ setting is enabled and the document is 20% quotations making the omitted words percentage 20%) [Learn more](#)

Copyleaks Internal Database

Our Internal Database is a collection of millions of user-submitted documents that you can utilize as a scan resource and choose whether or not you would like to submit the file you are scanning into the Internal Database. [Learn more](#)

Filtered and Excluded Results

The report will generate a complete list of results. There is always the option to exclude specific results that are not relevant. Note, by unchecking certain results, the similarity percentage may change. [Learn more](#)

Current Batch Results

These are the results displayed from the collection, or batch, of files uploaded for a scan at the same time. [Learn more](#)

AI Content

30.8%

	Text Coverage	Words
AI Text	30.8%	2,967
Low Frequency		398
Medium Frequency		0
High Frequency		9
Human Text	69.2%	1,718
<hr/>		
Excluded		
Omitted Words		0

About AI Detection

Our AI Detector is the only enterprise-level solution that can verify if the content was written by a human or generated by AI, including source code and text that has been plagiarized or modified. [Learn more](#)

AI Text

A body of text that has been generated or altered by AI technology.

[Learn more](#)

Human Text

Any text that has been fully written by a human and has not been altered or generated by AI. [Learn more](#)

CopyLeaks AI Detector Effectiveness

Credible data at scale, coupled with machine learning and widespread adoption, allows us to continually refine and improve our ability to understand complex text patterns, resulting in over 99% accuracy—far higher than any other AI detector—and improving daily. [Learn more](#)

Ideal Text Length

The higher the character count, the easier for our technology to determine irregular patterns, which results in a higher confidence rating for AI detection. [Learn more](#)

Reasons It Might Be AI When You Think It's Not

The AI Detector can detect a variety of AI-generated text, including tools that use AI technology to paraphrase content, auto-complete sentences, and more. [Learn more](#)

User AI Alert History

Historical data of how many times a user has been flagged for potentially having AI text within their content. [Learn more](#)

AI Logic

The number of times a phrase was found more frequently in AI vs human text is shown according to low, medium, and high frequency. [Learn more](#)

AI Logic

Shows you the “why” behind AI detection with sources you can see and verify.

AI Phrases

Detects phrases that appear with higher frequency in AI-written text than in human writing.

The frequency of a phrase in AI vs. human text.

5 x  767x

767x privacy, consent and

How frequently the phrase was found in our dataset:

AI Text	111.3 / 1,000,000 Documents
Human Text	0.15 / 1,000,000 Documents

767x privacy, consent and

How frequently the phrase was found in our dataset:

AI Text	111.3 / 1,000,000 Documents
Human Text	0.15 / 1,000,000 Documents

644x behavior, preferences and

How frequently the phrase was found in our dataset:

AI Text	233.85 / 1,000,000 Documents
Human Text	0.36 / 1,000,000 Documents

213x in the era of AI

How frequently the phrase was found in our dataset:

AI Text	46.27 / 1,000,000 Documents
Human Text	0.22 / 1,000,000 Documents

190x ethical and inclusive.

How frequently the phrase was found in our dataset:

AI Text	41.27 / 1,000,000 Documents
Human Text	0.22 / 1,000,000 Documents

178x AI models and

How frequently the phrase was found in our dataset:

AI Text	155.07 / 1,000,000 Documents
Human Text	0.87 / 1,000,000 Documents

166x to Broader Societal

How frequently the phrase was found in our dataset:

AI Text	156.32 / 1,000,000 Documents
Human Text	0.94 / 1,000,000 Documents

113x for a more inclusive and

How frequently the phrase was found in our dataset:

AI Text	296.38 / 1,000,000 Documents
Human Text	2.61 / 1,000,000 Documents

95x and Iterative Refinement

How frequently the phrase was found in our dataset:

AI Text	27.51 / 1,000,000 Documents
Human Text	0.29 / 1,000,000 Documents

86x future where technology

How frequently the phrase was found in our dataset:

AI Text	275.12 / 1,000,000 Documents
Human Text	3.19 / 1,000,000 Documents

76x an AI Model.

How frequently the phrase was found in our dataset:

AI Text	160.07 / 1,000,000 Documents
Human Text	2.1 / 1,000,000 Documents

66x individuals or systems

How frequently the phrase was found in our dataset:

AI Text	28.76 / 1,000,000 Documents
Human Text	0.44 / 1,000,000 Documents

65x AI and IoT

How frequently the phrase was found in our dataset:

AI Text	322.64 / 1,000,000 Documents
Human Text	4.93 / 1,000,000 Documents

62x development and ethical

How frequently the phrase was found in our dataset:

AI Text	45.02 / 1,000,000 Documents
Human Text	0.73 / 1,000,000 Documents

61x for Enhancing Communication

How frequently the phrase was found in our dataset:

AI Text 66.28 / 1,000,000 Documents

Human Text 1.09 / 1,000,000 Documents

61x for Enhancing Communication

How frequently the phrase was found in our dataset:

AI Text 66.28 / 1,000,000 Documents

Human Text 1.09 / 1,000,000 Documents

60x user data privacy.

How frequently the phrase was found in our dataset:

AI Text 65.03 / 1,000,000 Documents

Human Text 1.09 / 1,000,000 Documents

57x is not just seen

How frequently the phrase was found in our dataset:

AI Text 50.02 / 1,000,000 Documents

Human Text 0.87 / 1,000,000 Documents

55x learning and ethical

How frequently the phrase was found in our dataset:

AI Text 40.02 / 1,000,000 Documents

Human Text 0.73 / 1,000,000 Documents

50x of AI and the

How frequently the phrase was found in our dataset:

AI Text 163.82 / 1,000,000 Documents

Human Text 3.27 / 1,000,000 Documents

50x but also about making

How frequently the phrase was found in our dataset:

AI Text 61.28 / 1,000,000 Documents

Human Text 1.23 / 1,000,000 Documents

44x challenges in communication

How frequently the phrase was found in our dataset:

AI Text 60.03 / 1,000,000 Documents

Human Text 1.38 / 1,000,000 Documents

43x Based on what users

How frequently the phrase was found in our dataset:

AI Text 46.27 / 1,000,000 Documents

Human Text 1.09 / 1,000,000 Documents

41x that ethical principles

How frequently the phrase was found in our dataset:

AI Text 38.77 / 1,000,000 Documents

Human Text 0.94 / 1,000,000 Documents

37x principles serve as

How frequently the phrase was found in our dataset:

AI Text 56.28 / 1,000,000 Documents

Human Text 1.52 / 1,000,000 Documents

36x (survey or interview

How frequently the phrase was found in our dataset:

AI Text 47.52 / 1,000,000 Documents

Human Text 1.31 / 1,000,000 Documents

33x and Societal Impact

How frequently the phrase was found in our dataset:

AI Text 286.38 / 1,000,000 Documents

Human Text 8.56 / 1,000,000 Documents

32x and user behavior.

How frequently the phrase was found in our dataset:

AI Text 245.11 / 1,000,000 Documents

Human Text 7.55 / 1,000,000 Documents

32x where everyone has equal

How frequently the phrase was found in our dataset:

AI Text	46.27 / 1,000,000 Documents
Human Text	1.45 / 1,000,000 Documents

31x Expected Outcomes The

How frequently the phrase was found in our dataset:

AI Text	56.28 / 1,000,000 Documents
Human Text	1.81 / 1,000,000 Documents

29x Refinement Based on

How frequently the phrase was found in our dataset:

AI Text	66.28 / 1,000,000 Documents
Human Text	2.25 / 1,000,000 Documents

29x This guarantees that

How frequently the phrase was found in our dataset:

AI Text	641.54 / 1,000,000 Documents
Human Text	22.28 / 1,000,000 Documents

29x and AI Technology

How frequently the phrase was found in our dataset:

AI Text	91.29 / 1,000,000 Documents
Human Text	3.19 / 1,000,000 Documents

28x Options: Users can

How frequently the phrase was found in our dataset:

AI Text	95.04 / 1,000,000 Documents
Human Text	3.41 / 1,000,000 Documents

28x organizations to handle

How frequently the phrase was found in our dataset:

AI Text	52.52 / 1,000,000 Documents
Human Text	1.89 / 1,000,000 Documents

27x in smart homes

How frequently the phrase was found in our dataset:

AI Text	141.31 / 1,000,000 Documents
Human Text	5.23 / 1,000,000 Documents

26x society as a whole by

How frequently the phrase was found in our dataset:

AI Text	76.28 / 1,000,000 Documents
Human Text	2.9 / 1,000,000 Documents

25x adapt to various

How frequently the phrase was found in our dataset:

AI Text	336.4 / 1,000,000 Documents
Human Text	13.35 / 1,000,000 Documents

25x future that is more

How frequently the phrase was found in our dataset:

AI Text	45.02 / 1,000,000 Documents
Human Text	1.81 / 1,000,000 Documents

24x changes in digital

How frequently the phrase was found in our dataset:

AI Text	55.02 / 1,000,000 Documents
Human Text	2.25 / 1,000,000 Documents

23x Existing Gaps in

How frequently the phrase was found in our dataset:

AI Text	140.06 / 1,000,000 Documents
Human Text	6.17 / 1,000,000 Documents

20x Its compatibility with

How frequently the phrase was found in our dataset:

AI Text	421.44 / 1,000,000 Documents
Human Text	20.97 / 1,000,000 Documents

20x these barriers by

How frequently the phrase was found in our dataset:

AI Text	53.77 / 1,000,000 Documents
Human Text	2.69 / 1,000,000 Documents

20x improved communication and

How frequently the phrase was found in our dataset:

AI Text	210.09 / 1,000,000 Documents
Human Text	10.52 / 1,000,000 Documents

19x of smart technologies

How frequently the phrase was found in our dataset:

AI Text	127.56 / 1,000,000 Documents
Human Text	6.68 / 1,000,000 Documents

19x such as workplaces,

How frequently the phrase was found in our dataset:

AI Text	32.51 / 1,000,000 Documents
Human Text	1.74 / 1,000,000 Documents

18x is a revolutionary step

How frequently the phrase was found in our dataset:

AI Text	30.01 / 1,000,000 Documents
Human Text	1.67 / 1,000,000 Documents

18x practitioners, policymakers and,

How frequently the phrase was found in our dataset:

AI Text	51.27 / 1,000,000 Documents
Human Text	2.9 / 1,000,000 Documents

17x ensure the project

How frequently the phrase was found in our dataset:

AI Text	267.62 / 1,000,000 Documents
Human Text	15.89 / 1,000,000 Documents

17x for fairness and

How frequently the phrase was found in our dataset:

AI Text	296.38 / 1,000,000 Documents
Human Text	17.78 / 1,000,000 Documents

17x can adjust settings

How frequently the phrase was found in our dataset:

AI Text	31.26 / 1,000,000 Documents
Human Text	1.89 / 1,000,000 Documents

16x needs and expectations of the

How frequently the phrase was found in our dataset:

AI Text	98.79 / 1,000,000 Documents
Human Text	6.1 / 1,000,000 Documents

16x embodies the idea of

How frequently the phrase was found in our dataset:

AI Text	45.02 / 1,000,000 Documents
Human Text	2.83 / 1,000,000 Documents

16x with GDPR and

How frequently the phrase was found in our dataset:

AI Text	41.27 / 1,000,000 Documents
Human Text	2.61 / 1,000,000 Documents

15x Sustainable Cities and Communities

How frequently the phrase was found in our dataset:

AI Text	88.79 / 1,000,000 Documents
Human Text	6.02 / 1,000,000 Documents

14x that suits every

How frequently the phrase was found in our dataset:

AI Text	43.77 / 1,000,000 Documents
Human Text	3.05 / 1,000,000 Documents

14x engagement in social

How frequently the phrase was found in our dataset:

AI Text	85.04 / 1,000,000 Documents
Human Text	6.1 / 1,000,000 Documents

14x workshops, webinars and

How frequently the phrase was found in our dataset:

AI Text	41.27 / 1,000,000 Documents
Human Text	2.98 / 1,000,000 Documents

14x and economic advancement.

How frequently the phrase was found in our dataset:

AI Text	111.3 / 1,000,000 Documents
Human Text	8.13 / 1,000,000 Documents

13x spoken words into

How frequently the phrase was found in our dataset:

AI Text	53.77 / 1,000,000 Documents
Human Text	3.99 / 1,000,000 Documents

13x but also as a tool

How frequently the phrase was found in our dataset:

AI Text	31.26 / 1,000,000 Documents
Human Text	2.32 / 1,000,000 Documents

13x mission is clear,

How frequently the phrase was found in our dataset:

AI Text	91.29 / 1,000,000 Documents
Human Text	7.18 / 1,000,000 Documents

13x Lovely Professional University

How frequently the phrase was found in our dataset:

AI Text	51.27 / 1,000,000 Documents
Human Text	4.06 / 1,000,000 Documents

13x It achieves this by

How frequently the phrase was found in our dataset:

AI Text	80.04 / 1,000,000 Documents
Human Text	6.39 / 1,000,000 Documents

13x does not only provide

How frequently the phrase was found in our dataset:

AI Text	70.03 / 1,000,000 Documents
Human Text	5.59 / 1,000,000 Documents

12x focus on social justice.

How frequently the phrase was found in our dataset:

AI Text	43.77 / 1,000,000 Documents
Human Text	3.56 / 1,000,000 Documents

11x in society. While

How frequently the phrase was found in our dataset:

AI Text	95.04 / 1,000,000 Documents
Human Text	8.35 / 1,000,000 Documents

11x the United Nations Sustainable Development Goals (SDGs).

How frequently the phrase was found in our dataset:

AI Text	70.03 / 1,000,000 Documents
Human Text	6.24 / 1,000,000 Documents

10x part in conversations

How frequently the phrase was found in our dataset:

AI Text	37.52 / 1,000,000 Documents
Human Text	3.63 / 1,000,000 Documents

10x and personal settings

How frequently the phrase was found in our dataset:

AI Text	31.26 / 1,000,000 Documents
Human Text	3.12 / 1,000,000 Documents

10x main objectives and

How frequently the phrase was found in our dataset:

AI Text	30.01 / 1,000,000 Documents
Human Text	3.12 / 1,000,000 Documents

9x not only about making

How frequently the phrase was found in our dataset:

AI Text	30.01 / 1,000,000 Documents
Human Text	3.27 / 1,000,000 Documents

9x is carefully designed to

How frequently the phrase was found in our dataset:

AI Text	81.29 / 1,000,000 Documents
Human Text	9 / 1,000,000 Documents

9x ready for emergencies

How frequently the phrase was found in our dataset:

AI Text	28.76 / 1,000,000 Documents
Human Text	3.27 / 1,000,000 Documents

9x to Artificial Intelligence

How frequently the phrase was found in our dataset:

AI Text	366.41 / 1,000,000 Documents
Human Text	41.8 / 1,000,000 Documents

9x to create safe and

How frequently the phrase was found in our dataset:

AI Text	240.11 / 1,000,000 Documents
Human Text	27.94 / 1,000,000 Documents

9x responses based on

How frequently the phrase was found in our dataset:

AI Text	152.57 / 1,000,000 Documents
Human Text	17.78 / 1,000,000 Documents

8x connects well with

How frequently the phrase was found in our dataset:

AI Text	28.76 / 1,000,000 Documents
Human Text	3.48 / 1,000,000 Documents

8x others in real time,

How frequently the phrase was found in our dataset:

AI Text	27.51 / 1,000,000 Documents
Human Text	3.34 / 1,000,000 Documents

8x This helps ensure that

How frequently the phrase was found in our dataset:

AI Text	108.8 / 1,000,000 Documents
Human Text	13.35 / 1,000,000 Documents

8x is iterative and

How frequently the phrase was found in our dataset:

AI Text	31.26 / 1,000,000 Documents
Human Text	3.85 / 1,000,000 Documents

8x Rights, Dignity, and

How frequently the phrase was found in our dataset:

AI Text	47.52 / 1,000,000 Documents
Human Text	5.95 / 1,000,000 Documents

8x reflects how the

How frequently the phrase was found in our dataset:

AI Text	70.03 / 1,000,000 Documents
Human Text	9.07 / 1,000,000 Documents

8x It is a reflection of

How frequently the phrase was found in our dataset:

AI Text	186.33 / 1,000,000 Documents
Human Text	24.17 / 1,000,000 Documents

8x The AI will

How frequently the phrase was found in our dataset:

AI Text	122.55 / 1,000,000 Documents
Human Text	15.97 / 1,000,000 Documents

8x to customize these

How frequently the phrase was found in our dataset:

AI Text	50.02 / 1,000,000 Documents
Human Text	6.6 / 1,000,000 Documents

8x have a comfortable and

How frequently the phrase was found in our dataset:

AI Text	77.53 / 1,000,000 Documents
Human Text	10.31 / 1,000,000 Documents

7x an after-thought but

How frequently the phrase was found in our dataset:

AI Text	81.29 / 1,000,000 Documents
Human Text	10.89 / 1,000,000 Documents

7x often struggle with

How frequently the phrase was found in our dataset:

AI Text	267.62 / 1,000,000 Documents
Human Text	37.3 / 1,000,000 Documents

7x people communicate and

How frequently the phrase was found in our dataset:

AI Text	67.53 / 1,000,000 Documents
Human Text	9.43 / 1,000,000 Documents

7x The frameworks of

How frequently the phrase was found in our dataset:

AI Text	86.29 / 1,000,000 Documents
Human Text	12.19 / 1,000,000 Documents

7x how people think about

How frequently the phrase was found in our dataset:

AI Text	93.79 / 1,000,000 Documents
Human Text	13.43 / 1,000,000 Documents

7x that it focuses on

How frequently the phrase was found in our dataset:

AI Text	120.05 / 1,000,000 Documents
Human Text	17.42 / 1,000,000 Documents

7x obstacles that make

How frequently the phrase was found in our dataset:

AI Text	26.26 / 1,000,000 Documents
Human Text	3.85 / 1,000,000 Documents

7x tool of social

How frequently the phrase was found in our dataset:

AI Text	38.77 / 1,000,000 Documents
Human Text	5.95 / 1,000,000 Documents

7x emphasis on safety

How frequently the phrase was found in our dataset:

AI Text	120.05 / 1,000,000 Documents
Human Text	18.43 / 1,000,000 Documents

6x for people's dignity and

How frequently the phrase was found in our dataset:

AI Text	66.28 / 1,000,000 Documents
Human Text	10.45 / 1,000,000 Documents

6x during the development process

How frequently the phrase was found in our dataset:

AI Text	138.81 / 1,000,000 Documents
Human Text	22.13 / 1,000,000 Documents

6x is a paradigm shift in

How frequently the phrase was found in our dataset:

AI Text	31.26 / 1,000,000 Documents
Human Text	5.01 / 1,000,000 Documents

6x are the main features.

How frequently the phrase was found in our dataset:

AI Text	113.8 / 1,000,000 Documents
Human Text	19.16 / 1,000,000 Documents

6x in a way that fits

How frequently the phrase was found in our dataset:

AI Text	73.78 / 1,000,000 Documents
Human Text	12.63 / 1,000,000 Documents

6x and improves their

How frequently the phrase was found in our dataset:

AI Text	90.04 / 1,000,000 Documents
Human Text	15.53 / 1,000,000 Documents

6x being aware of their

How frequently the phrase was found in our dataset:

AI Text	52.52 / 1,000,000 Documents
Human Text	9.07 / 1,000,000 Documents

6x the platform are

How frequently the phrase was found in our dataset:

AI Text	91.29 / 1,000,000 Documents
Human Text	15.89 / 1,000,000 Documents

6x this methodology is

How frequently the phrase was found in our dataset:

AI Text	183.83 / 1,000,000 Documents
Human Text	32.73 / 1,000,000 Documents

6x the foundation of a good

How frequently the phrase was found in our dataset:

AI Text	70.03 / 1,000,000 Documents
Human Text	12.48 / 1,000,000 Documents

6x different places such as

How frequently the phrase was found in our dataset:

AI Text	27.51 / 1,000,000 Documents
Human Text	4.93 / 1,000,000 Documents

6x and qualitative information

How frequently the phrase was found in our dataset:

AI Text	35.02 / 1,000,000 Documents
Human Text	6.31 / 1,000,000 Documents

6x and how users

How frequently the phrase was found in our dataset:

AI Text	42.52 / 1,000,000 Documents
Human Text	7.69 / 1,000,000 Documents

5x inclusion for all,

How frequently the phrase was found in our dataset:

AI Text	46.27 / 1,000,000 Documents
Human Text	8.49 / 1,000,000 Documents

5x helping them stay

How frequently the phrase was found in our dataset:

AI Text	50.02 / 1,000,000 Documents
Human Text	9.22 / 1,000,000 Documents

5x of assistive technologies

How frequently the phrase was found in our dataset:

AI Text	48.77 / 1,000,000 Documents
Human Text	9 / 1,000,000 Documents

5x their mental and physical

How frequently the phrase was found in our dataset:

AI Text	125.06 / 1,000,000 Documents
Human Text	23.37 / 1,000,000 Documents

5x with the Internet of Things.

How frequently the phrase was found in our dataset:

AI Text	92.54 / 1,000,000 Documents
Human Text	17.34 / 1,000,000 Documents

5x way that supports

How frequently the phrase was found in our dataset:

AI Text	96.29 / 1,000,000 Documents
Human Text	18.22 / 1,000,000 Documents

5x part in society

How frequently the phrase was found in our dataset:

AI Text	35.02 / 1,000,000 Documents
Human Text	6.68 / 1,000,000 Documents

5x their cultures and

How frequently the phrase was found in our dataset:

AI Text	133.81 / 1,000,000 Documents
Human Text	25.62 / 1,000,000 Documents

5x mobile applications and

How frequently the phrase was found in our dataset:

AI Text	272.62 / 1,000,000 Documents
Human Text	52.61 / 1,000,000 Documents

5x Key Objectives of

How frequently the phrase was found in our dataset:

AI Text	97.54 / 1,000,000 Documents
Human Text	19.01 / 1,000,000 Documents

Cover Page

Project Title: EchoBridge: Smart IoT and AI Systems for Enhancing Communication and Safety for Deaf and Hard of Hearing Individuals

Submitted to: Artificial Intelligence Medical and Engineering Researchers Society

Principal Investigator: Dr. Isha Batra

Co-Investigator Name: Dr. Arun Malik

Institution: Lovely Professional University

Date: 28/5/2025

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Project Title

Executive Summary

Background and Objectives.

Methodology

Expected Outcomes

Budget Estimate

1. Project Title

EchoBridge: Smart IoT and AI Systems for Enhancing Communication and Safety for Deaf and Hard of Hearing Individuals

2. Executive Summary

EchoBridge connects well with AIMERS's main objectives and goals that support universal health, sustainable ideas and including all parts of society. Many of the world is using technology to strengthen existing inequality, but the EchoBridge app shows that technology can have a positive impact by helping people like the DHH. With EchoBridge, technology is not making existing gaps between societies wider, but is actually helping to bring everyone closer together and provide more independence and health to everyone.

Addressing Critical Accessibility Gaps

Being aware of accessibility now, most parts of the modern environment are not ready to help DHH individuals with communication and safety issues. Assistive devices are useful, but tend to lack the innovation or usefulness of AI and the newest technology. It achieves this by making accessibility an important part of each technological development. With devices that sense critical sounds and alert DHH persons via vision, touch or mobile phones, EchoBridge makes sure everybody can benefit from a smart environment.

Also, moving further than the bare compliance standards is recognized by EchoBridge as important. Therefore, DHH users have real time facts, simple and personal settings and an interface they can use without difficulty, helping them stay safe and involved with people around them. Because AIMERS believes in full health and inclusion for all, technology is not just seen as convenient at AIMERS, but also as a tool for fairness and dignity.

Ethical Technology for Inclusive Progress

When not supported by morality, technology can somehow help uphold obstacles in society. EchoBridge ensures that ethical principles are considered at every point, including user data privacy, collecting consent and innovative ways to involve people in every part of the system. It is notable that EchoBridge has a partnership built over time with people in the DHH community. EchoBridge applies co-design by inviting DHH people to join as co-creators, testers and guides during research and development. User behavior, preferences and hopes guide the appearance, design and experience when using technology.

This focus on participation reflects how the AIMERS want to provide answers and not rely on external judgments of what helps people.

EchoBridge includes the wisdom of a group and promotes everyone's agency, so whatever results emerge from the platform are socially approved, courteous and significant.

Advancing Rights, Dignity, and Safety

EchoBridge helps DHH people protect their rights by giving them access to real-time communication and surroundings awareness. That's why, in emergency situations such as when a fire alarm sounds or there is a risk to safety, with timing being very important and the right information possibly saving lives, EchoBridge helps DHH users get alerts that are easy for them to use.

The emphasis on safety fits with EchoBridge's normal concern for people's dignity and capacity for decision-making. The environment starts to look after our well-being instead of the person having to change their behavior or make different arrangements to be comfortable. With EchoBridge, disabled people get back the basic human privilege of being able to take part in society without extra dangers or hassles.

Through promoting these rights, EchoBridge both benefits its users and demonstrates how community efforts can move from giving charity to supporting equal rights for people with disabilities which AIMERS seeks to achieve.

Contributing to Broader Societal Goals

Along with helping its users, EchoBridge contributes to society as a whole by supporting goals set out in frameworks, for example the United Nations Sustainable Development Goals (SDGs). Particularly, EchoBridge can be used with:

Goal 3: Promoting Good Health and Well-Being

Striving to create safe and emotionally supportive places, EchoBridge helps the DHH in their mental and physical development.

Goal 10 is to decrease inequalities.

The launch of smart technologies by EchoBridge allowed disabled and non-disabled groups to catch up socially, in education and economy.

Sustainable Cities and Communities is the theme of Goal Number 11.

Including accessibility features in smart homes and cities through EchoBridge makes spaces more supportive, ready for emergencies and eco-friendly.

So, EchoBridge proves that making technology available and empowering everyone is not an extra goal in progress, but the foundation of a good and lasting future. EchoBridge is not only a software project; it is also a push for a more inclusive and fair world. Its compatibility with AIMERS's mission is clear, covering all the main themes like its ethical base, participatory design and a focus on social justice.

EchoBridge improves environments and also reshapes how people think about diversity, compassion and sustainable ideas that help people. In every respect, EchoBridge embodies the idea of holistic human well-being, strong and encompassing development and ethical new ideas which AIMERS aims for.

3. Background and Objectives

EchoBridge focuses on the transformational vision: making sure that Deaf and Hard of Hearing (DHH) people are fully included and independent in society. While assistive technology has improved, deaf and hard-of-hearing people often struggle with daily issues, mostly in talking to others in real time, being aware of their environment and reacting to emergencies. EchoBridge seeks to provide these solutions by combining AI and IoT technology in people's homes and buildings for real inclusion.

With smart, networked technology, EchoBridge attempts to allow DHH people to access important data in a personalized way that supports their full engagement in social and personal affairs and improves their well-being

Addressing Existing Gaps in Accessibility

Assistive solutions today are not well-connected, are generally focused on a limited scope and don't keep up with the modern, activity-based approach. For example, DHH people have to count on tools such as alarm systems with bright lights or basic text relay services which are limited solutions and cannot be used in busy spaces such as workplaces, public transport or during gatherings.

Missing audio cues such as fire alarms, doorbells, public announcements, nearby vehicles or words spoken alerts the person to dangers and makes them miss any opportunities.

Taking part in conversations happens less smoothly, especially when people are speaking at once, it's very loud or the pace is rapid.

If information is delayed or blocked during an emergency, the effects may make individuals or systems more open to threats.

Such barriers make things difficult for daily living, emotional state, engagement in the community and economic advancement. EchoBridge is set up to eliminate these barriers by carefully including accessibility in everyday daily routines.

Key Objectives of EchoBridge

The purpose of EchoBridge is to make a versatile, instant alerting and communication tool that suits every user's needs and the places they use it in. It's not only about making things that are lonely, but also about making spaces where everyone has equal chance to engage with the Internet of Things.

The precise aims are:

IoT Sensor Networks: Place sensors in houses, work areas, busy areas and the transport system. They will detect the various sounds in the environment, like (alarms, doorbells, announcements) and activate alarms that help people.

There Are Multiple Alert Options: Users can pick if they'd like to see flashing visuals, receive physical vibrations or get mobile notification.

Users are able to customize these responses based on their environment (notifying them loudly at home and softly at work).

AI models will give speech-to-text transcriptions and analyze the sound context, helping users follow conversations and distinguish important and urgent sounds from others.

The AI will understand a user's habits and what is important to them, so alerts are only sent when they are relevant and timely.

When EchoBridge supports users in a smooth, aware and individualized way, these individuals will benefit greatly in their daily activities.

Commitment to Participatory, User-Centered Design

According to EchoBridge, DHH communities should work together in designing technology, rather than receive technologies passively. hence, DHH users will be involved in design, development and testing sessions by taking part in workshops, focus groups and co-design events.

By using this teamwork-centered model:

User needs, wants and issues will directly affect the way the product is designed.

All the ways people in the DHH community communicate, their cultures and how they access information will be respected and included.

Ethics are included in system architecture with regard to data privacy, consent and how users can adjust settings on their technology.

Since individuals are involved, the technologies are advanced and truly designed to meet the everyday needs of DHH people.

Expected Outcomes and Societal Impact

There are many expected outcomes from using EchoBridge and they are all transformative.

Users will be stronger and self-reliant in moving around different places without others' support.

Greater Engagement: Engaging in real-time and with an awareness of the environment gives DHH people more access to education, jobs, active citizenship and social events.

Better Safety: Getting alerts on urgent events will protect residents from many critical dangers.

Helping People Feel Better and Be Included: EchoBridge is set to improve mental health, reduce stress and loneliness, making the communities more inclusive by taking away barriers to communication and senses.

In addition, the project will serve as an ethical, user-focused approach to finding ways that new technologies can encourage human rights, dignity and social progress that lasts. The goal of EchoBridge is to modify the way technology helps people with disabilities. When supported by AI and the IoT, EchoBridge will make it easier for DHH people to live life independently, safely and interact more with others.

With this new approach, EchoBridge switches its focus from giving help to helping others achieve a more just, caring and inclusive way of

life.

4. Methodology

EchoBridge makes use of a planned methodology that will enable both the technology and the system to provide the appropriate support for Deaf and Hard of Hearing (DHH) people. Every phase aims to include users, gather regular feedback and update the design in cycles to make sure the answers are sustainable, suitable for all and ethical.

Working this way, every technological change is based on real experiences, making sure EchoBridge moves from being a concept to a true solution for people.

Stage 1: User-Centered Design Research

The initiative starts with extensive research covering the needs of the users. Guidelines need to be based on DHH peoples' wishes, daily life and requirements. Focus groups, personal interviews and participatory design will enable researchers to work with many DHH individuals who share age, background, preferences of communication and levels of knowledge about digital games and the internet. They will cover a variety of topics which could be:

Problems communicating in the home, at work, when using public transport and in many public places.

How people choose to receive alerts (through visual signs, vibrations or sounds).

Privacy concerns and questions about what is ethical regarding collecting and processing data and using a system.

The team will develop detailed personas and scenario maps based on their research which will guide them into identifying technical needs centered on accessibility, customization and ethical design.

Stage 2: Technology Development

With the information from the first stage, the project proceeds to stage two which is about technology development.

Setting up IoT Sensors.

Devices will be developed for the Internet of Things to find out when alarms, doorbells, announcements or emergency signals are being played. Users won't feel disturbed by these sensors because they will blend in at home, at work and in public, always giving real-time feedback about the surrounding environment.

Training an AI Model:

How AI models are trained will include both important tasks.

Adopting technology that provides live caption for whenever people speak.

Paying attention to what is happening in the background, to know what specific sounds imply (such as the difference between the beeps from the stove versus the fire alarm).

Training AI with many datasets helps the models perform well in different sound conditions, languages and ways the app is used, so they stay fair and inclusive.

Stage 3: System Integration

After making the key technology components, the next thing is to integrate the various systems. An integrated platform will be developed in this stage and it will communicate with users via several channels like

They can use mobile applications that provide instant notifications, allow changing the smart home settings and view the atmosphere in real-time.

Wearable Devices: Camouflaged devices that give clues by touch or sight.

Connecting lights, alarms and automated systems at home means you can respond and stay comfortable more easily.

This phase focuses on growing into an ecosystem where all the elements work together to provide the same, simple and customized support.

Stage 4: Pilot Testing and Iterative Refinement

System integration will see initial EchoBridge prototypes being tested out by DHH volunteers within real experiments. The pilot testing will take place in homes, offices, schools and public buildings so the application can work in many environments.

As the pilot period went on:

System logs produce information showing patterns, response time and the rate of errors.

Structured interviews, surveys and user diaries will be used to get qualitative results on user satisfaction, what challenges they face and their suggested improvements.

After considering the results, EchoBridge will keep getting better and better through iterative updates. Gradual advancements in tech, interface design and functions will be introduced to cause the system to adjust and perform better.

Stage 5: Deployment and Evaluation

At the last point in the methodology, the approach is fully deployed and tested.

Part of the evaluation process will cover:

You can measure how well your team responds to alerts, how easily and effectively they communicate and how much support they keep needing.

How people talk about the way EchoBridge influences their daily routines, safety and social relationships.

The final phase, fine-tuning of the system, brings all the findings which can be looked at in reports, academic papers and community tools.

This helps ensure that the insights EchoBridge gains are introduced to many people to benefit the community and encourage new advancements in assistive technology. The company's strategy with 5 steps helps ensure the project grows intelligently, engages users and stays modest. Because active users participate in learning and ethical development, EchoBridge will build reliable solutions that increase access and well-being among the DHH community.

4.1 Timelines

The rollout of the EchoBridge project will take place during a well-organized 30-month period comprising of four major phases. Each phase is carefully designed to allow comprehensive user engagement, technological development, integration, validation and dissemination. The methodology is iterative and participatory in the nature that it focuses on constant feedback, ethical innovation, and real-world implications. This guarantees that EchoBridge does not only provide state-of-the-art technology but it attends to the experienced needs and expectations of the Deaf and Hard of Hearing (DHH) communities it intends to serve.

Phase 1 (Months 1-6): Participatory Design and Specification Mapping

End-user participation during co-design is very important for EchoBridge. During the first half of the project, the team will organise workshops with DHH individuals as well as audiologists, educators, communication specialists and accessibility advocates.

These activities are the main ones that will be done:

Recognizing Important Situations: Group sessions and role-playing activities will lead to identifying different places such as homes, jobs, means of transit and public areas, where challenges in communication emerge for DHH people.

With the help of various methods (visual stories, interpreters who use sign language and tactile devices), we will find out from users how they desire information to be captured, processed and demonstrated.

Based on what users share, clear specifications for IoT hardware (like microphones and vibration sensors), protocols for communication, AI models and user interfaces will be set up.

Taking care of data so that privacy, consent and data minimization are the main features. Procedures that comply with GDPR and disability research guidelines will be created.

At this time, we double check that the design follows users' needs, responds to differences and is responsible from what it does from the start.

Phase 2 (Months 7-15): IoT and AI Technology Development

After Phase 1, Phase 2 concentrates on technology, where crucial parts of EchoBridge's systems are designed, built and verified by the team.

Important technological efforts are:

Working with IoT Modules:

Sensitive microphones designed to tell the difference between general noise and important signals

Wearable item equipped with vibration sensors for tactile signals

Technology to measure sound, temperature and movements to make sure DHHs have a comfortable and secure environment.

The Process of Building an AI Model.

Building models that accurately turn spoken words into text captions for a wide range of accents, dialects and situations.

Keyword spotting means training models so they can find sounds such as fire alarms, doorbells, sirens and announcements about emergencies.

Classification of sounds depending on their insurance and the user's relationship to avoid providing too much data at one time.

Reliability, accuracy, low-latency and energy efficiency will need to be confirmed during the development process through the help of simulation tests and laboratory verification.

Phase 3 (Months 16-24): Integration, Pilot Testing, and Iterative Refinement

In this stage, real prototypes are tested in the field and their results could determine success or failure. That involves assembling the systems into platforms and carrying out pilot tests.

The main things that take place are:

System Integration:

IoT hardware, AI models, mobile applications and wearable interfaces will all be connected to each other by using powerful communication protocols.

Users will be able to personalize the types of alerts they receive (vibration, visual or alert), the notifications in general and accessibility.

Pilot Testing:

Chosen locations such as homes, workplaces and community centers, will have EchoBridge prototypes installed with DHH participants.

Testing will show the telemetry data (performance records of the system) and qualitative information (survey or interview results and observations), as well as times of alerts and user behavior.

Iterative Refinement:

Based on pilot data, future updates will care for technical errors, obstacles that make the system difficult to use and gaps between what the system should do and how users expect it to work.

Continuous and swift improvements will make sure that changes are tested several times and released in a way the users feel satisfied with and the system stays reliable.

It ensures that EchoBridge develops in a way that fits real users' situations since it includes actual user cases.

Phase 4 (Months 25-30): Evaluation, Finalization, and Dissemination

The last step includes a thorough test, improvements to the system and releasing it to a larger group.

Main activities of public utility firms consist of:

Impact Evaluation:

Quantitative Assessment: Judging these areas; new reductions in the time taken to react to alerts, better journey-related skills, improved communication and less concern about not being informed.

Qualitative Data: Recording how EchoBridge has improved the users' everyday living, made them feel safer, empowered and promoted better social connections.

Resources for (Tools) and Deploying Them:

Creating the documentation for users, installation, technical details and customization guidance.

To help with sharing and reusing the software frameworks and APIs, by organizing open-source repositories hosted by TechBridge.

Community Resources:

Launching workshops, webinars and training videos that support users, care givers and organizations to handle and customize echo on the bridge by themselves.

Materials on Policy Advocacy:

Creating policy briefs that could drive changes in digital accessibility across Sweden and the EU.

The last phase will assure that EchoBridge's legacy includes making smart environments accessible, ethical and inclusive.

As a result of these four stages, EchoBridge will shift from a user concept to a proven and powerful technology platform that changes interactions between DHH people and their surroundings. Because this methodology is iterative, participatory and ethical, all its steps follow both technical excellence and responsibility to society.

5. Expected Outcomes

The EchoBridge project is a paradigm shift in the development of assistive technologies for Deaf and Hard of Hearing (DHH) people.

Assistive devices for DHH users have in the past been the non-progressive and stand alone solutions - visual doorbell flashers, vibrating alarm clocks, or standalone captioning, which act independently and reactively. EchoBridge breaks this model by combining sensing in physical world with intelligent digital augmentation, forming a living, evolving ecosystem that personalizes interventions in real time according to the milieu, situational hazards, and user-preferences.

This ability is a revolutionary step in the way DHH people communicate and move about the environment. Relying on fixed aids or third-party translation, instead, users will encounter persistent, proactive assistance that will adapt to various situations – if using it in a spontaneous conversation at work or, e.g., commuting through a large transit system, or in the event of an emergency, like, say, a fire alarm.

EchoBridge allows more autonomy, spontaneity, and self-assurance, which enables DHH people to engage in every field of life in a more active and self-reliant manner.

Apart from individual impact, EchoBridge has major contributions to other fields such as inclusive design, smart cities and accessibility rights. As urban spaces continue to get digitized and connected, it is essential for accessibility features to not be an after-thought but be built in. EchoBridge sets the stage for smart environments in which the Universal design principles serve as the underlying architecture of the IoT networks, AI communications systems, and real-time alerting systems. The frameworks of its can be adapted and transferred globally, affecting the decisions of cities, working places, educational institutions and public spaces about digital inclusion.

Moreover, EchoBridge will create technological and social innovations for the new understanding of what "assistive support" is in the era of AI and IoT. From the technical perspective, it will bring new models of real-time, context-aware multi-modal alerting and communication. Socially, it will be breaking the conventions of disability accommodation and heading toward future where technology is naturally empowering and not segregating.

With its new technologies that are designed to respond to people - not the other way around, EchoBridge moves towards the future that is more human, dignified, and equal. It is a reflection of how clever technology, designed with ethical, participation procedures can turn into the tool of social transformation magnifying human's rights, autonomy, and well-being for historically disadvantaged communities.

5.1 Anticipated Results

Whether the EchoBridge project succeeds will depend on what it creates and how much it spreads to different areas. Wisdom and solutions uncovered by EchoBridge should be shared with various groups, particularly with researchers, practitioners, policymakers and, above all, the Deaf and Hard of Hearing (DHH) communities.

A variety of actions are put in place to share EchoBridge in different ways and make sure its outcomes are good for research, making

policy and using inclusive smart technology in real life.

Peer-Reviewed Publications

Finding from EchoBridge will be disseminated mainly through top-ranked journals about assistive technology and digital accessibility.

Articles will be published in respected outlets such as Assistive Technology, IEEE Access, Disability and Rehabilitation: Assistive Technology and the Journal of Deaf Studies and Deaf Education.

The research articles will look at various areas of the project.

How active participation is encouraged within the design of these systems by DHH communities.

Enhancements in IoT detectors and instant AI captioning for sound based products have been made.

Case studies that come from testing phases in homes, schools and public areas.

Looking after the ethics involved in research that uses sensory and communication data from groups marginalized in today's society.

EchoBridge protects the rigor of its science and makes it public by publishing in noted peer-reviewed journals, helping to promote interaction and creative improvement within science circles.

Presentations at Leading Conferences

Conference presentations will be used to bring together researchers, professionals, technology innovators and policymakers. Findings from EchoBridge will be viewed at prominent international forums, for example:

The International Conference on Deaf Education, one of the top places for new ideas in teaching, accessibility and technology for DHH students.

The International Conference on Smart Homes and Health Telematics (ICOST) centers on intelligent, connected homes for improving health and well-being.

Formats for the conference will cover oral papers, workshops meant for interaction, poster presentations and live demos of the EchoBridge system. In the workshops, participants will work with real IoT-connected devices and experience using AI-powered captioning.

Participating in a conference will also help others understand the ideas, give useful comments for developing the project further and make contacts to reach a wider audience.

Open-Source Software Repositories

EchoBridge's core values are transparency, the ability to participate and getting the community involved. These principles will be advanced by making significant project results publicly available through places like GitHub, GitLab or institutional repositories.

There will be an open-source release that contains:

EchoBridge framework: It uses modular IoT programming for spotting noises, processing sounds and responding to the environment.

API Modules: Made so that application programming interfaces (APIs) are interoperable, this allows developers to bring EchoBridge components into third-party applications.

Technical Guides: In-depth manuals, examples and best practice materials for programmers and researchers.

Because everything on EchoBridge is available free of charge, more people are drawn to try out and use its technologies in different ways, where they form a strong community to support ethical AI and accessibility.

User-Centered Webinars and Workshops

The communities get the most out of new technology when it is directly introduced to them. Deaf organizations, accessibility NGOs, teachers and users will benefit from the webinars and workshops EchoBridge will arrange.

These sessions will be made up of the following:

EchoBridge technologies were presented live as people used them in various real-life situations (such as homes and public security).

Teaching modules on building and customizing Internet of Things devices for users to access.

Talks about user opinions, future requirements and cooperative design to progress the development.

All webinars and workshops will include sign language interpretation, use captions and be simple to join on their platforms. EchoBridge insists on user-centered outreach so the DHH community can work together to use and develop its technologies.

Policy Briefs and Advocacy Materials

Apart from using technology, EchoBridge works to influence national and European legislation regarding accessibility. We will create policy briefs that take the project's result and produce effective guidance for governments, standards organizations and public service providers.

The briefs will be mainly based on:

Ways to introduce IoT-related accessibility features into the public environment.

Rules for ethical use of AI in DHH include protecting their privacy and independence.

Proposals for adding smart accessibility methods to rules on housing, schools and emergency action.

EchoBridge will engage with digital accessibility efforts in Sweden and the EU, giving clear evidence for why technology should be made more inclusive in both public and private places.

Going forward, work towards this challenge will try to involve major community organizations, making sure the arguments we build support the needs and desires of those we are advocating for.

Sharing Anonymized Datasets and Ethical Frameworks

EchoBridge will share the anonymized data sets and ethical standards worked on during the project to help set a responsible foundation for future research. Scientists and researchers who are approved will be granted access to the datasets which include non-identifiable sensory and interaction information, under strict privacy measures.

As well, the project is planning to openly publish ethical guidelines for working with marginalized populations in AI/IoT projects. It will help others in the field create fair and welcoming technologies.

Because EchoBridge establishes guidelines for ethical behavior, it impacts research culture broadly, encouraging more respect for dignity, privacy and responsibility.

The plan includes academic publishing, open-source development, workshops for the community, advocating for policies and focusing on ethics, making sure EchoBridge's discoveries help DHH people, influence communities and drive more technological progress in the field of inclusion.

6. Budget Estimate

Time Period: 30 months

Time Period (Months)	Salaries (INR)	Equipment/Material (INR)	Travel (INR)	Other Costs (INR)	Total (INR)
Months 1-6	100000	30000	9000	10000	140000
Months 7-12	100000	30000	9000	10000	140000
Months 13-18	100000	30000	9000	10000	140000
Months 19-24	100000	30000	9000	10000	140000
Months 25-30	100000	30000	9000	10000	140000
Total Estimated Cost 7,00,000					