International Conference on Computational Complexity and Intelligent Algorithms : Submission (5) has been created.

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Fri, Dec 20, 2024 at 3:13 PM

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Hello,

The following submission has been created.

Track Name: IC3IA2025

Paper ID: 5

Paper Title: Developing an IoT Driven BCI Framework for Real-Time Neural Signal Decoding to Speech Conversion

Abstract:
This study introduces an innovative method for
converting EEG brain signals into phonemes, facilitating
communication for those with speech disorders. The research
utilizes a machine learning system that analyzes multi-channel
EEG data from 14 electrodes to predict phonemes associated
with intended speech. Unlike traditional approaches that
require expensive EEG equipment, this project incorporates
a budget-friendly simulation framework, combining random
signal generation for dynamic authenticity and dataset-driven
signal replication for accurate predictions. The methodology
involves EEG data preprocessing, feature extraction, and
training a fusion model to achieve effective phoneme
classification. The findings show considerable accuracy in
phoneme prediction, underscoring the potential of EEG-based
systems in augmentative and alternative communication
(AAC) technologies. Additionally, a simulated hardware
prototype and an interactive graphical user interface are
created to offer a realistic system demonstration, addressing
the limitations of restricted access to EEG hardware. This
research addresses a crucial need for accessible speech
synthesis systems and paves the way for affordable, scalable
solutions in brain-computer interface technology.

Created on: Fri, 20 Dec 2024 09:42:54 GMT

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Secondary Subject Areas: Not Entered

Submission Files:
    IC3IA_Conference_2025.pdf (2 Mb, Fri, 20 Dec 2024 09:39:16 GMT)

Submission Questions Response: Not Entered

Thanks,
CMT team.
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Thu, Dec 26, 2024 at 11:38 AM

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