

ANNUAL SCIENCE REPORT

TECHNOLOGY FOR
BETTER SOCIETY

Research
innovation
Acoustic
Engineering
AI



LEADING INNOVATION

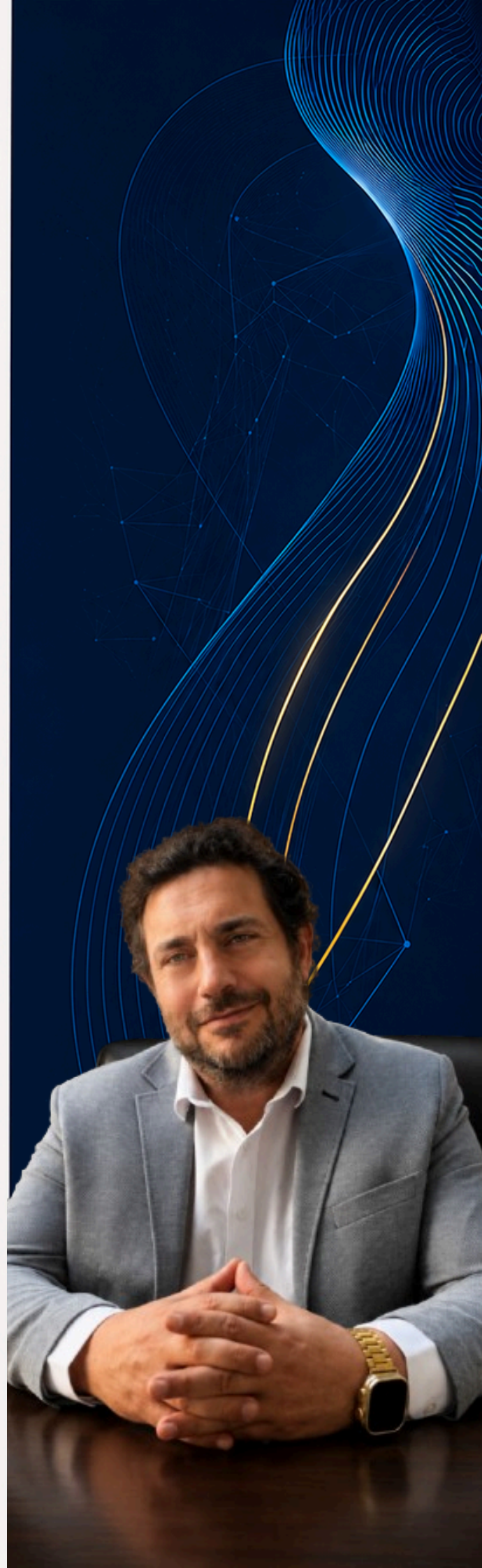
A Message from Our Founder & Chairman

Dear Partners and Friends, 2026 has been a remarkable year of discovery, innovation, and impact.

At ENOSH Science Center, we continue to transform knowledge into Solutions that address real-world challenges and contribute to a better society.

We are proud of our achievements and excited about the future ahead.

Prof. Ibrahim El Noshokaty
Chairman & Founder



Vision

To shape the future through science, innovation, and technology, empowering societies and inspiring the next generation of discoveries.



Mission

To deliver impactful scientific and technological solutions through research excellence, interdisciplinary collaboration, and a commitment to advancing human knowledge and sustainable development.



OVERVIEW

The portfolio is organized into four parts. Part I presents research papers and scientific projects in acoustics, neuroscience, artificial intelligence, auditory processing, cultural heritage restoration, and intelligent sensing. Part II presents applied studies in acoustic engineering and broadcasting engineering. Part III presents student-sponsored projects, highlighting the supervision, development, and implementation of research and innovation initiatives that support student learning and academic advancement. Part IV documents peer-review and editorial contributions, including multi-round manuscript evaluation, quantitative integrity assessment, clinical-claim review, reviewer governance, and reviewer-network development.

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Scientific Projects**

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Research Papers and Scientific Projects

**Scientific Contributions and
Professional Activities
2025–2026**

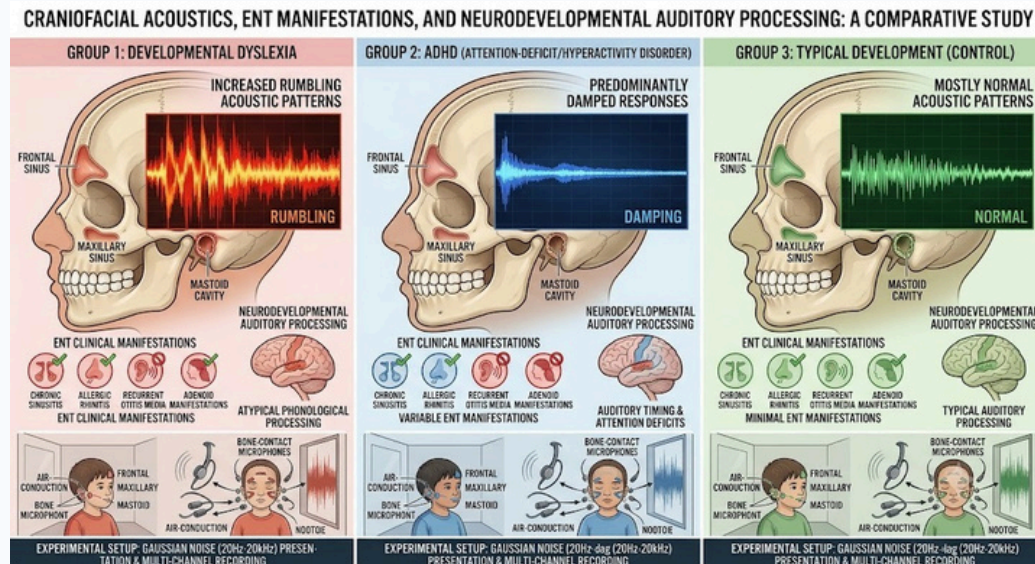
1. Passive Hearing Abilities of Children with Dyslexia: Investigating the Rumble Frequency of the Skull-Bone Cavity



ABSTRACT

This study investigates passive acoustic responses within the cranial bone cavities of children with developmental dyslexia. Gaussian noise covering the frequency range from 20 Hz to 20 kHz was presented at 70 dB HL inside a controlled acoustic environment. Two air-conduction microphones and six bone-contact microphones were positioned around the frontal, maxillary, and mastoid regions to record the acoustic response of the skull cavities. Signals were acquired at 48 kHz/24-bit resolution and analysed using the short-time Fourier transform with a 1000 ms Hanning window and a 10 ms frame shift. Acoustic behaviour was classified into damping, resonance, rumbling, and normal-response patterns according to defined amplitude thresholds. The findings indicate that children with dyslexia exhibit a higher incidence of rumbling responses and unstable cranial resonance patterns than typically developing children. These results suggest that passive skull-cavity acoustics may provide a complementary physiological marker for investigating atypical auditory processing in developmental dyslexia.

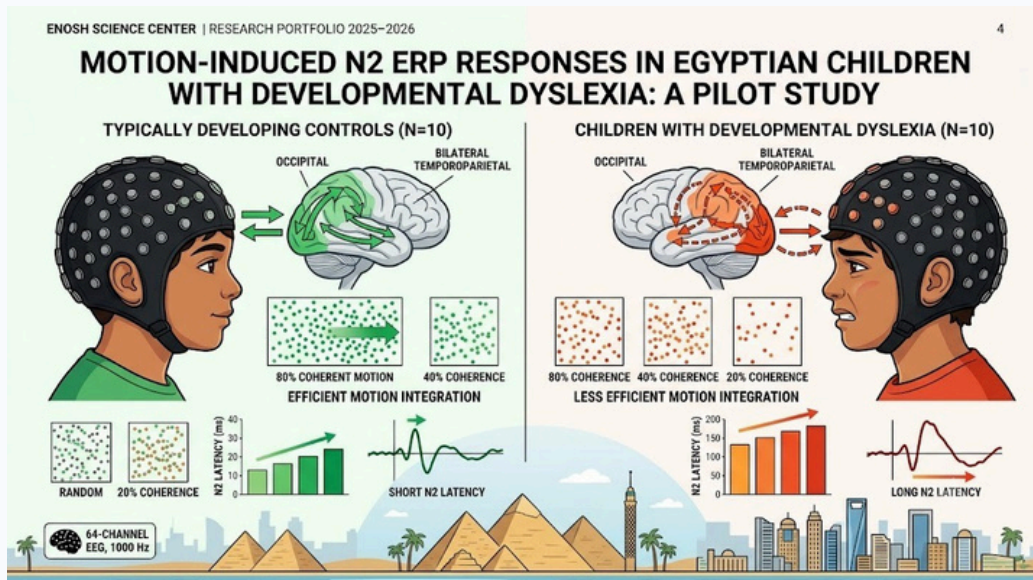
2. Skull-Bone Cavity Acoustics in Dyslexia, ADHD, and Typically Developing Children: A Comparative Study of Resonance Patterns and ENT Clinical Manifestations



ABSTRACT

This study compares skull-bone cavity acoustic responses and ear, nose, and throat clinical manifestations among children with developmental dyslexia, attention-deficit/hyperactivity disorder, and typical development. Ninety-nine children aged 6–15 years were divided equally into dyslexia, ADHD, and control groups. Gaussian noise between 20 Hz and 20 kHz was presented at 70 dB HL, while two air-conduction microphones and six bone-contact microphones recorded responses from the frontal, maxillary, and mastoid regions. Signal analysis was performed using a 1000 ms Hanning-window short-time Fourier transform with a 10 ms frame shift. Responses were classified as damping, resonance, rumbling, or normal. Children with dyslexia demonstrated increased rumbling patterns, particularly in the frontal, maxillary, and mastoid cavities. Children with ADHD exhibited predominantly damped responses, whereas controls showed mostly normal acoustic patterns. Significant group differences were also identified in chronic sinusitis, allergic rhinitis, recurrent otitis media, and adenoid manifestations. The results support a potential relationship between craniofacial cavity acoustics, ENT status, and neurodevelopmental auditory processing.

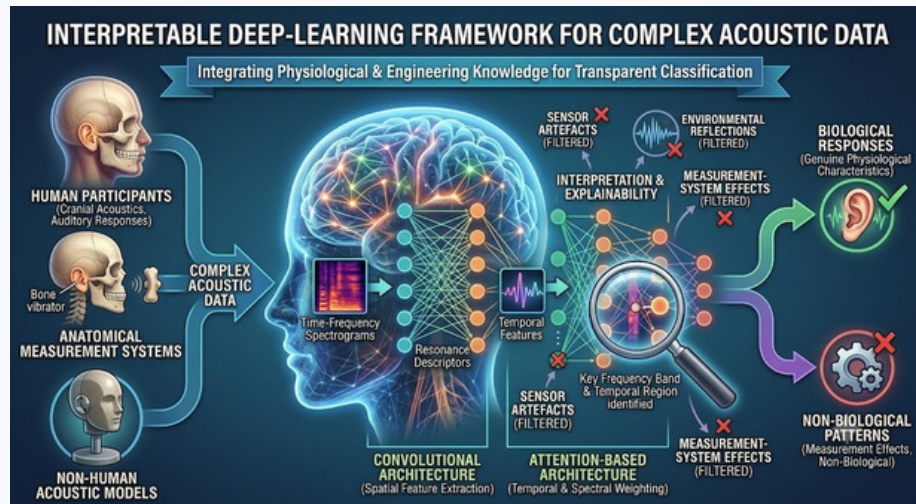
3. Motion-Induced N2 Responses in Typically Developing and Dyslexic Egyptian Children: A Neurophysiological Pilot Study



ABSTRACT

This pilot study investigates motion-induced N2 event-related potential responses in Egyptian children with developmental dyslexia and typically developing controls. Twenty children participated, including ten children with dyslexia and ten age-matched controls. Visual motion perception was assessed using random-dot kinematograms presented at different motion-coherence levels, including random motion and 20%, 40%, and 80% coherent motion. Electroencephalographic signals were recorded using a 64-channel ANT eego sports system at a sampling rate of 1000 Hz. Pre-processing included band-pass filtering, 50 Hz notch filtering, independent component analysis, and artefact rejection. N2 latency and amplitude were evaluated across occipital and bilateral temporoparietal regions. Children with dyslexia demonstrated longer descriptive N2 latencies, particularly at higher motion-coherence conditions, suggesting less efficient cortical integration of visual motion. Although the principal between-group finding did not remain significant after correction for multiple comparisons, the observed latency pattern supports further investigation using larger samples and refined motion-processing paradigms.

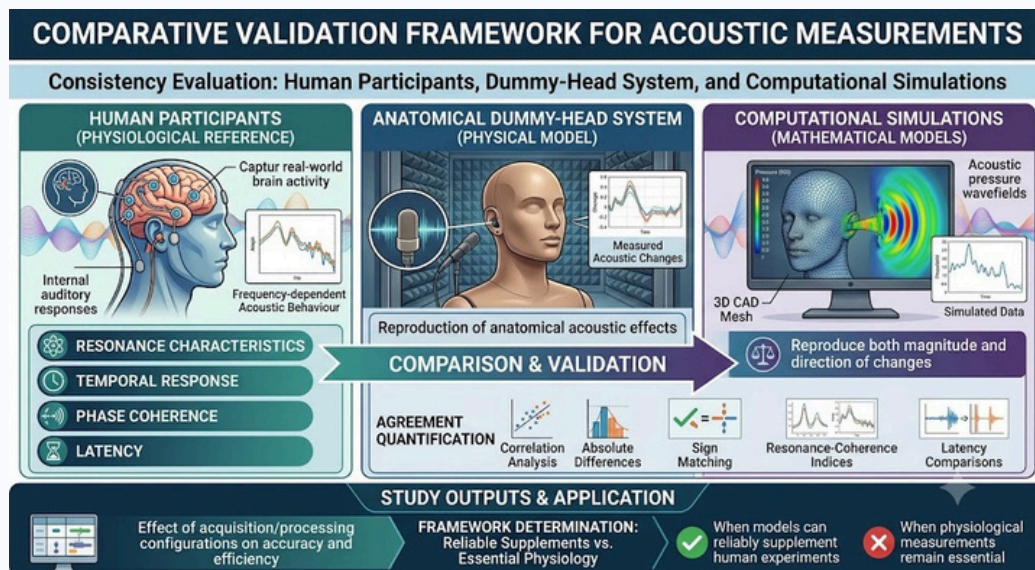
4. Interpretable Deep Learning for Modelling Acoustic Data in Humans and Non-Human Measurement Systems



ABSTRACT

This study proposes an interpretable deep-learning framework for modelling complex acoustic data obtained from human participants, anatomical measurement systems, and non-human acoustic models. The framework combines time-frequency representations, resonance descriptors, phase-related parameters, and temporal acoustic features to distinguish biological and non-biological response patterns. Short-time Fourier transform features are processed using convolutional and attention-based neural architectures, while interpretation methods are applied to identify the frequency bands and temporal regions that contribute most strongly to model decisions. Particular emphasis is placed on separating genuine physiological acoustic characteristics from sensor artefacts, environmental reflections, and measurement-system effects. The proposed approach is intended to support transparent acoustic classification rather than relying solely on black-box performance. By integrating explainability with physiological and engineering knowledge, the model provides a methodological foundation for analysing cranial acoustics, bone-conduction measurements, auditory responses, and other multidimensional acoustic datasets.

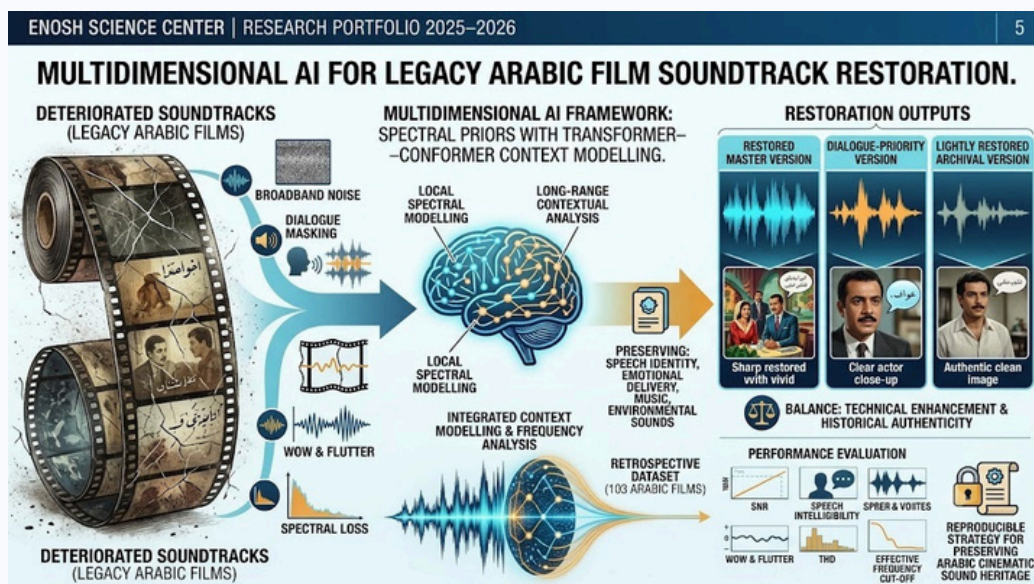
5. Comparative Validation of Human, Dummy-Head, and Computationally Simulated Acoustic Measurements



ABSTRACT

This study presents a comparative validation framework for evaluating the consistency of acoustic measurements obtained from human participants, an anatomical dummy-head system, and computational simulations. The analysis examines resonance characteristics, temporal response, phase coherence, latency, and frequency-dependent acoustic behaviour across the three measurement conditions. Human data are treated as the physiological reference, while dummy-head measurements assess the ability of physical models to reproduce anatomical acoustic effects. Simulated data are evaluated for their ability to reproduce both the magnitude and direction of measured acoustic changes. Agreement is quantified using correlation analysis, absolute differences, sign matching, resonance-coherence indices, and latency comparisons. The framework also investigates the effect of different acquisition and processing configurations on accuracy and computational efficiency. The results provide a structured method for determining when physical and computational models can reliably supplement human acoustic experiments and when physiological measurements remain essential.

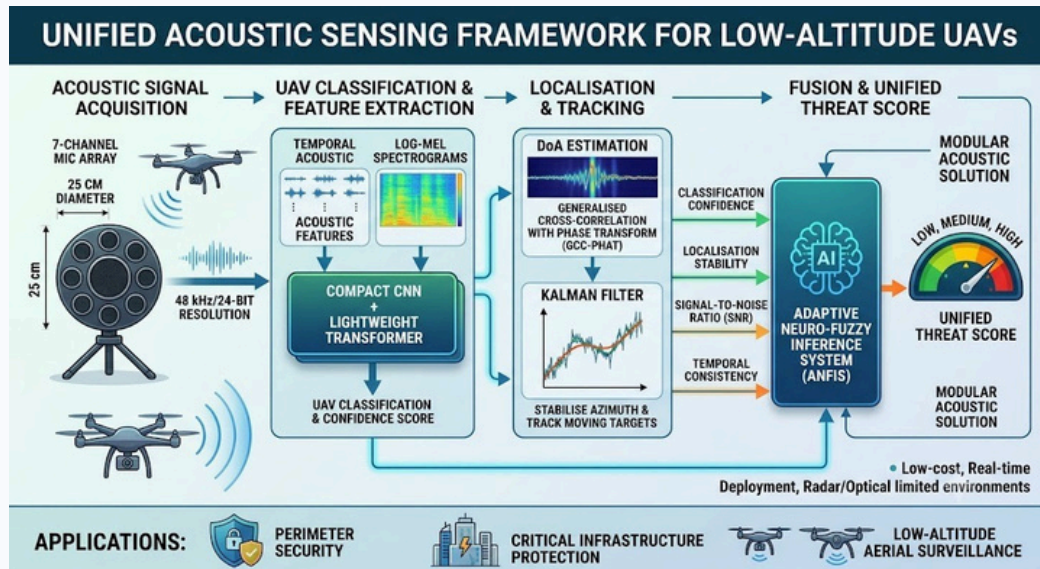
6. Integrating Spectral Priors and Transformer–Conformer Context Modelling for Multidimensional Restoration of Legacy Arabic Film Audio



ABSTRACT

This study proposes a multidimensional artificial-intelligence framework for restoring deteriorated soundtracks from legacy Arabic films. The method integrates spectral priors with Transformer–Conformer context modelling to address broadband noise, dialogue masking, spectral loss, distortion, wow and flutter, and temporal discontinuities. A retrospective dataset of 103 Arabic films is used to characterise common forms of degradation across different production periods and recording technologies. The system combines local spectral modelling with long-range contextual analysis to preserve speech identity, emotional delivery, music, and historically significant environmental sounds. Three restoration outputs are generated: a restored master version, a dialogue-priority version, and a lightly restored archival version. Performance is evaluated using objective measures including signal-to-noise ratio, speech intelligibility, total harmonic distortion, effective frequency cut-off, and wow-and-flutter measurements. The proposed framework aims to balance technical enhancement with historical authenticity and provides a reproducible strategy for preserving Arabic cinematic sound heritage.

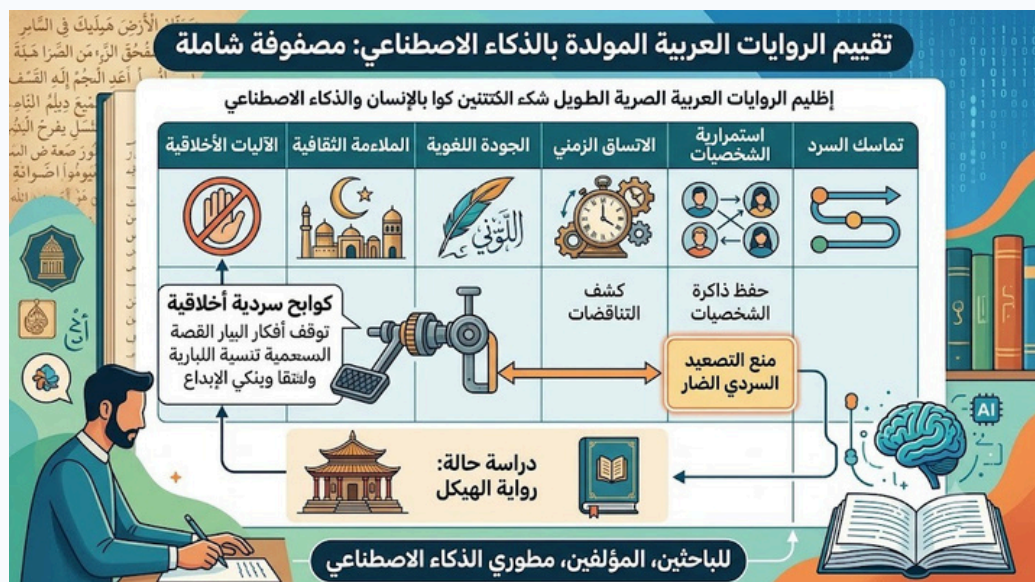
7. Unified Acoustic Sensing for Low-Altitude UAVs Using CNN-Transformer Classification, GCC-PHAT Localisation, Kalman Tracking, and ANFIS Fusion



ABSTRACT

This study presents a unified acoustic sensing framework for detecting, classifying, localising, and tracking low-altitude unmanned aerial vehicles. Acoustic signals are acquired using a seven-channel circular microphone array with a diameter of approximately 25 cm at 48 kHz/24-bit resolution. Log-mel spectrograms and temporal acoustic features are processed using a compact convolutional neural network combined with a lightweight Transformer architecture for UAV classification. Direction-of-arrival estimation is performed using generalised cross-correlation with phase transform, while a Kalman filter is employed to stabilise azimuth estimates and track moving targets. An adaptive neuro-fuzzy inference system integrates classification confidence, localisation stability, signal-to-noise ratio, and temporal consistency into a unified threat score. The proposed system is designed for low-cost, real-time deployment in environments where radar or optical detection may be limited. The architecture provides a modular acoustic solution for perimeter security, critical infrastructure protection, and low-altitude aerial surveillance.

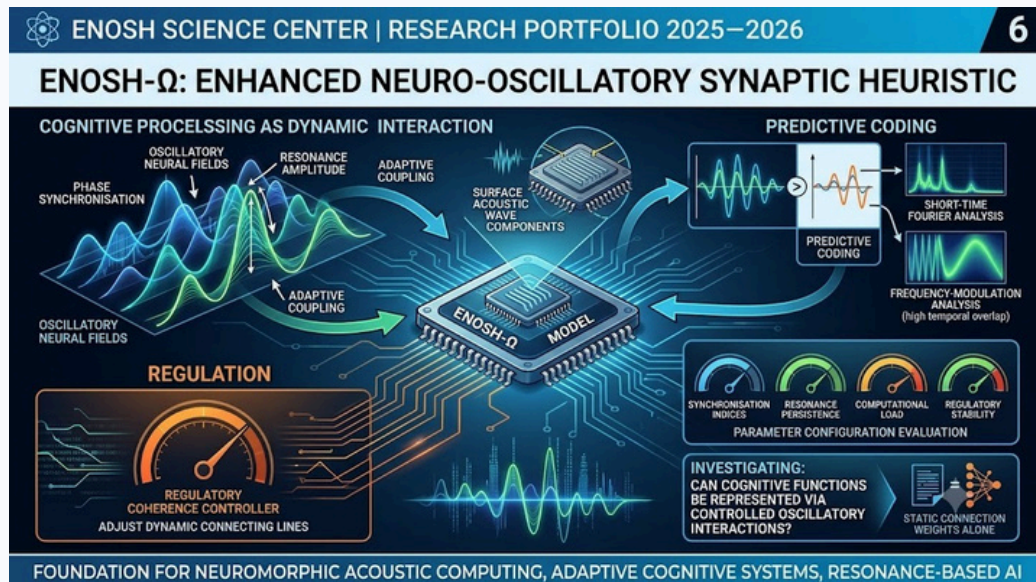
8. A Reproducible Matrix for Evaluating AI-Generated Arabic Fiction: Narrative Coherence, Character Continuity, and Ethical Narrative Brakes in The Temple



ABSTRACT

This study introduces a reproducible evaluation matrix for assessing long-form Arabic fiction generated collaboratively with artificial intelligence. Using the novel *The Temple* as a structured case study, the framework evaluates narrative coherence, temporal consistency, character continuity, emotional progression, linguistic quality, cultural appropriateness, and ethical control mechanisms. The proposed matrix combines qualitative literary assessment with weighted scoring criteria that can be applied across chapters and narrative stages. Particular attention is given to character-memory preservation, contradiction detection, plot continuity, and the prevention of ethically problematic narrative escalation. The concept of ethical narrative brakes is introduced to describe mechanisms that restrict harmful, manipulative, or contextually inappropriate story development while preserving creativity. The framework provides researchers, authors, and AI developers with a transparent method for evaluating Arabic generative storytelling. It also contributes to the broader discussion of culturally informed and ethically constrained artificial intelligence in creative writing.

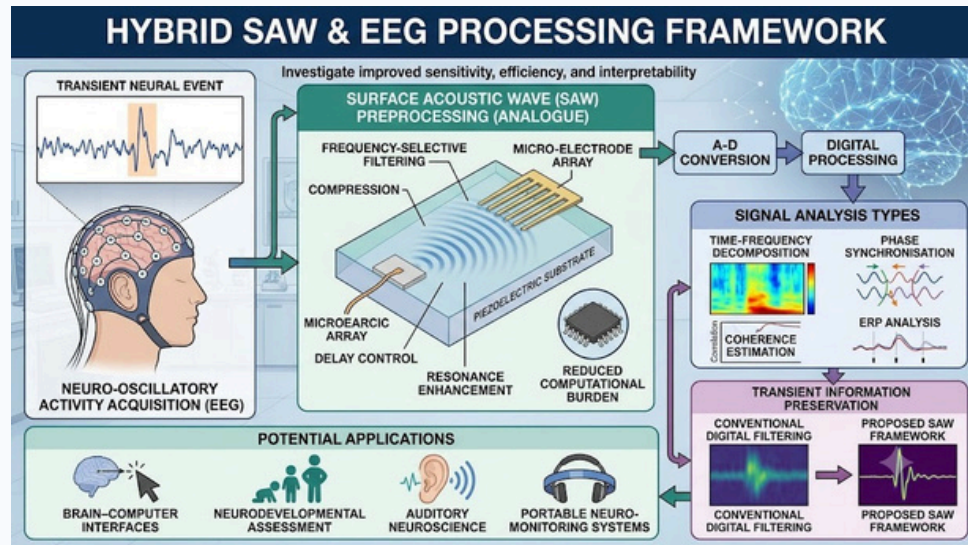
9. Evaluation of Enhanced Neuro-Oscillatory Synaptic Heuristic Parameter Configurations for Resonance-Based Cognition



ABSTRACT

This paper proposes the Enhanced Neuro-Oscillatory Synaptic Heuristic, designated ENOSH-Ω, as a resonance-based computational model of cognition. The framework conceptualises cognitive processing as a dynamically regulated interaction among oscillatory neural fields, phase synchronisation, resonance amplitude, and adaptive coupling. Surface acoustic wave components are proposed as physical or analogue representations of synaptic filtering and temporal integration. Predictive coding is implemented using short-time Fourier and frequency-modulation analysis with high temporal overlap, while a regulatory coherence controller adjusts coupling strength according to the stability of the resonance field. Different parameter configurations are evaluated according to synchronisation indices, resonance persistence, computational load, and regulatory stability. The model is intended to investigate whether cognitive functions can be represented through controlled oscillatory interactions rather than conventional static connection weights alone. ENOSH-Ω provides a theoretical and engineering foundation for neuromorphic acoustic computing, adaptive cognitive systems, and resonance-based artificial intelligence.

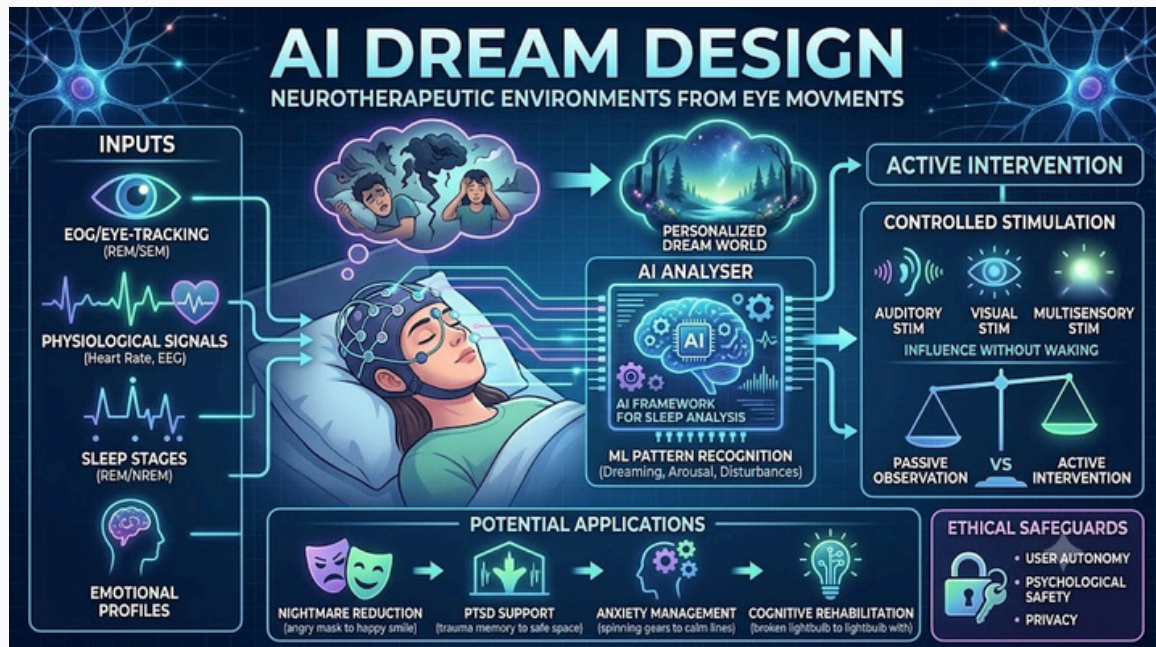
10. A Surface Acoustic Wave–EEG Framework for High-Resolution Neuro-Oscillatory Signal Processing



ABSTRACT

This study proposes a hybrid surface acoustic wave and electroencephalographic processing framework for analysing neuro-oscillatory activity with high temporal and spectral resolution. Surface acoustic wave devices fabricated on piezoelectric substrates are used as analogue preprocessing elements before analogue-to-digital conversion. These components provide frequency-selective filtering, compression, delay control, and resonance enhancement while reducing the computational burden placed on subsequent digital processing stages. The processed signals are subsequently analysed using time-frequency decomposition, phase synchronisation, coherence estimation, and event-related potential analysis. The proposed architecture is designed to preserve transient neural information that may be attenuated or distorted by conventional digital filtering. Potential applications include brain-computer interfaces, neurodevelopmental assessment, auditory neuroscience, and portable neuro-monitoring systems. The framework provides a basis for investigating whether acoustic-wave technologies can improve the sensitivity, efficiency, and interpretability of electrophysiological signal acquisition and analysis.

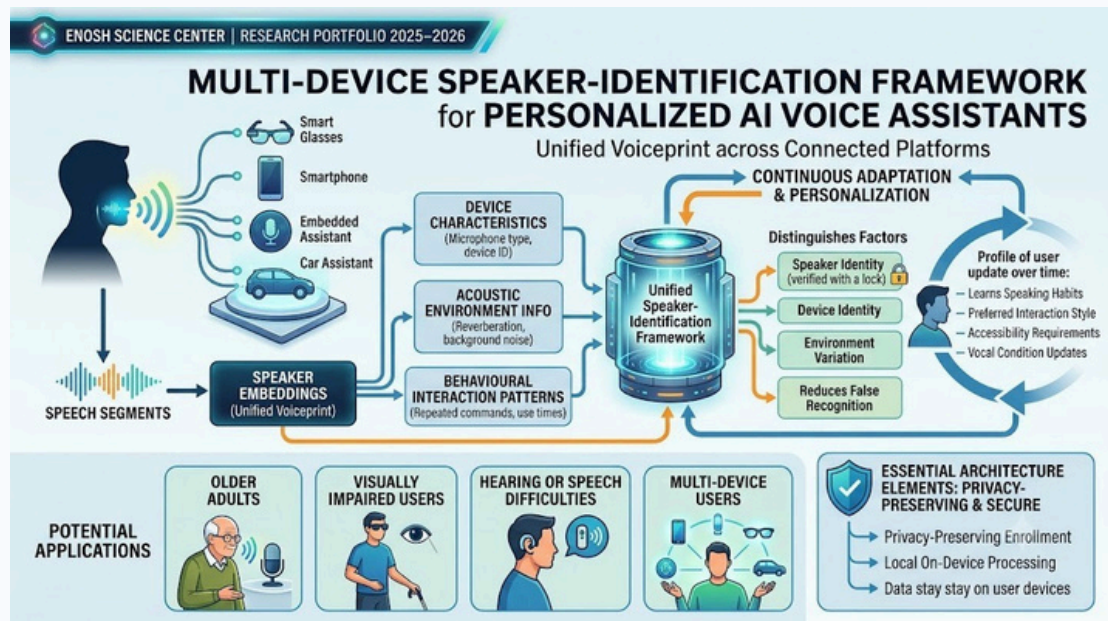
11. Deep Dreams: An AI-Assisted Framework for Eye-Movement Analysis and Neurotherapeutic Dream Engineering



ABSTRACT

This research proposes an artificial-intelligence framework for analysing sleep-related eye movements and generating personalised neurotherapeutic dream environments. The system combines electrooculographic or eye-tracking data with physiological signals, sleep-stage information, and user-specific emotional profiles. Machine-learning models identify recurring eye-movement patterns associated with dream activity, emotional arousal, and possible sleep disturbances. These patterns are then used to guide controlled auditory, visual, or multisensory stimulation designed to influence dream content without causing full awakening. The proposed framework distinguishes between passive dream observation and active therapeutic intervention. Potential applications include nightmare reduction, post-traumatic stress support, anxiety management, cognitive rehabilitation, and the study of conscious experience during sleep. Ethical safeguards are incorporated to protect user autonomy, psychological safety, and privacy. The study establishes a conceptual foundation for combining sleep neuroscience, artificial intelligence, psychoacoustics, and personalised therapeutic stimulation.

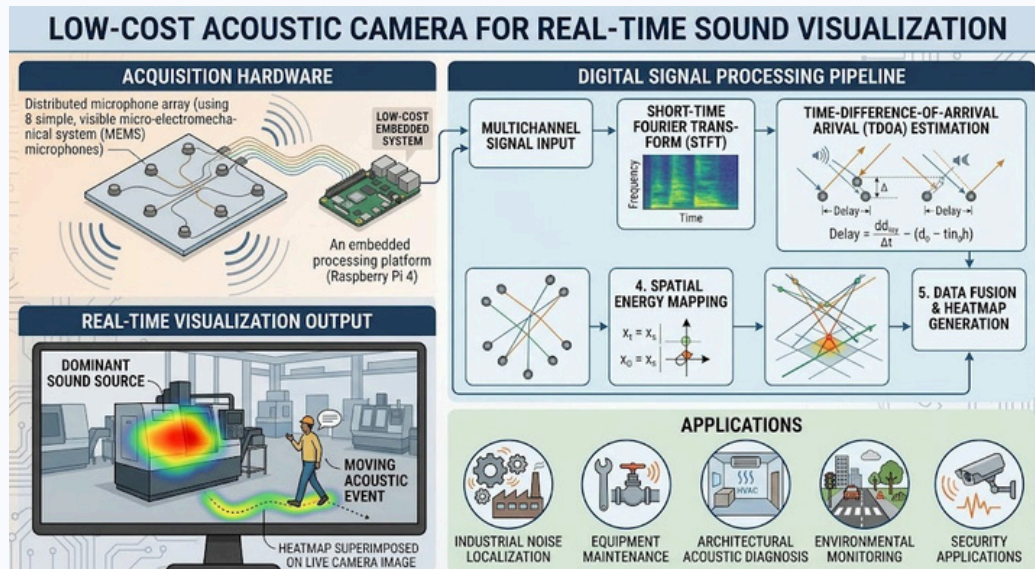
12. Multi-Device Speaker Identification and Behavioral Adaptation for the ENOSH AI Voice Assistant



ABSTRACT

This study proposes a multi-device speaker-identification framework for a personalised artificial-intelligence voice assistant. The system is designed to recognise the same user across smart glasses, mobile devices, embedded assistants, and other connected platforms using a unified voiceprint. Speaker embeddings are extracted from speech segments and combined with device characteristics, acoustic-environment information, and behavioural interaction patterns. The framework distinguishes between speaker identity, device identity, and environmental variation to reduce false recognition caused by microphone differences, background noise, or changes in vocal condition. Continuous adaptation allows the assistant to learn the user's speaking habits, preferred interaction style, accessibility requirements, and repeated commands while maintaining secure identity verification. The proposed system has potential applications for older adults, visually impaired users, people with hearing or speech difficulties, and users who interact with several assistive devices. Privacy-preserving enrolment and local processing are considered essential elements of the proposed architecture.

13. A Real-Time Low-Cost Acoustic Camera Using a Distributed Microphone Array and Embedded Signal Processing



ABSTRACT

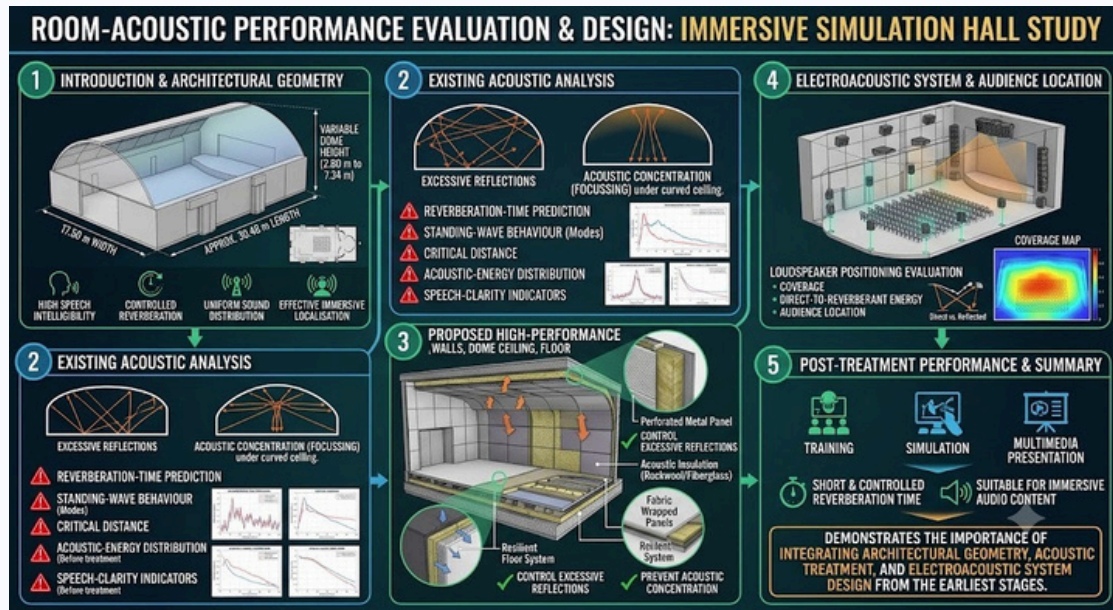
This study presents a low-cost acoustic camera for real-time visualisation of sound-source locations. The proposed system uses a distributed microphone array connected to an embedded processing platform such as a Raspberry Pi or a high-performance microcontroller. Multichannel acoustic signals are analysed using short-time Fourier transformation, time-difference-of-arrival estimation, and spatial energy mapping. Directional information from individual microphone pairs is fused to generate a heat map superimposed on a live camera image. The system is designed to identify dominant sound sources, track moving acoustic events, and distinguish persistent noise from transient signals. Particular attention is given to microphone calibration, synchronisation, array geometry, spatial resolution, and computational efficiency. The proposed acoustic camera can support architectural acoustic diagnosis, industrial noise localisation, equipment maintenance, environmental monitoring, security applications, and educational demonstrations.

Applied Acoustic Engineering Studies

**Applied Acoustic Engineering
Studies**

2025–2026

1- Acoustic Design of an Immersive Simulation Hall



ABSTRACT

This study evaluates the room-acoustic performance of a large immersive simulation hall measuring approximately 30.48 m in length and 17.50 m in width, with a variable dome height ranging from 2.80 m to 7.34 m. The design aims to achieve high speech intelligibility, controlled reverberation, uniform sound distribution, and effective localisation of immersive audio content. The analysis includes reverberation-time prediction, standing-wave behaviour, critical distance, acoustic-energy distribution, and speech-clarity indicators. High-performance sound-absorbing treatments are proposed for the walls, dome ceiling, and floor to control excessive reflections and prevent acoustic concentration beneath the curved ceiling. Loudspeaker positioning is evaluated in relation to coverage, direct-to-reverberant energy, and audience location. The proposed treatment produces a short and controlled reverberation time suitable for training, simulation, and multimedia presentation. The study demonstrates the importance of integrating architectural geometry, acoustic treatment, and electroacoustic system design from the earliest stages of an immersive environment.

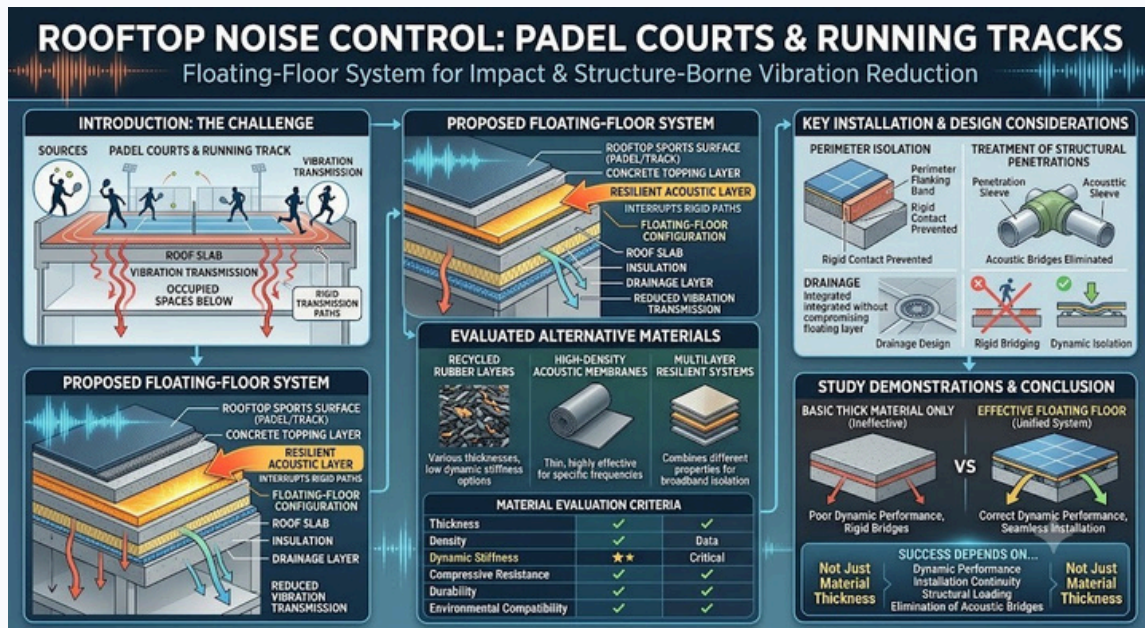
2- Detailed Acoustic Study for a Libya Satellite Television Shooting Studio



ABSTRACT

This study evaluates the room-acoustic performance of a large immersive simulation hall measuring approximately 30.48 m in length and 17.50 m in width, with a variable dome height ranging from 2.80 m to 7.34 m. The design aims to achieve high speech intelligibility, controlled reverberation, uniform sound distribution, and effective localisation of immersive audio content. The analysis includes reverberation-time prediction, standing-wave behaviour, critical distance, acoustic-energy distribution, and speech-clarity indicators. High-performance sound-absorbing treatments are proposed for the walls, dome ceiling, and floor to control excessive reflections and prevent acoustic concentration beneath the curved ceiling. Loudspeaker positioning is evaluated in relation to coverage, direct-to-reverberant energy, and audience location. The proposed treatment produces a short and controlled reverberation time suitable for training, simulation, and multimedia presentation. The study demonstrates the importance of integrating architectural geometry, acoustic treatment, and electroacoustic system design from the earliest stages of an immersive environment.

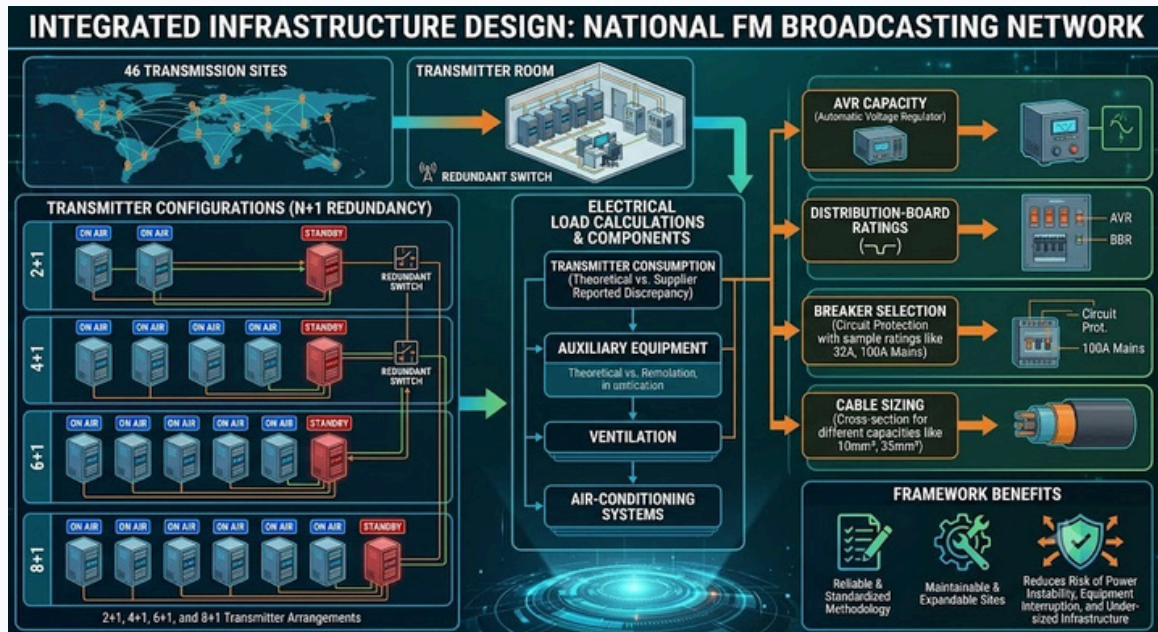
3- Impact-Sound and Structure-Borne Noise Control for Rooftop Sports Facilities



ABSTRACT

This study investigates the control of impact and structure-borne noise generated by rooftop padel courts and running tracks. The primary objective is to reduce vibration transmission from sports activities into occupied spaces below the roof slab. The proposed system places a resilient acoustic layer beneath the concrete topping to create a floating-floor configuration and interrupt rigid transmission paths. Alternative materials are evaluated according to thickness, density, dynamic stiffness, compressive resistance, durability, and compatibility with external environmental conditions. The assessment considers recycled rubber layers, high-density acoustic membranes, and multilayer resilient systems. Particular attention is given to perimeter isolation, treatment of structural penetrations, drainage, and prevention of rigid contact between the floating concrete layer and surrounding structural elements. The study demonstrates that effective rooftop noise control depends not only on material thickness but also on dynamic performance, installation continuity, structural loading, and the elimination of acoustic bridges.

4- Integrated Electrical and Technical Infrastructure Design for a 46-Site FM Broadcasting Network



ABSTRACT

This technical study presents an integrated infrastructure design for a national FM broadcasting network comprising 46 transmission sites. Each site is evaluated according to transmitter configuration, redundancy requirements, power consumption, cooling demand, technical racks, service outlets, voltage regulation, circuit protection, and cable sizing. Configurations including 2+1, 4+1, 6+1, and 8+1 transmitter arrangements are analysed to support N+1 operational redundancy. Electrical-load calculations incorporate transmitter efficiency, auxiliary equipment, ventilation, air-conditioning systems, and maintenance requirements. Automatic voltage regulator capacity, distribution-board ratings, breaker selection, and power-cable cross-sections are determined for different station capacities. The study also considers the discrepancy between theoretical transmitter consumption and supplier-reported system demand. The resulting framework provides a standardised methodology for designing reliable, maintainable, and expandable FM broadcasting sites while reducing the risk of power instability, equipment interruption, and under-sized infrastructure.

Peer-Review and Editorial Contributions

2025–2026

1- Multi-Round Peer Review of an Artificial Intelligence and EEG Review Manuscript

CONTRIBUTION SUMMARY

Prof. Ibrahim El Noshokaty contributed as an external peer reviewer to the scientific evaluation of a comprehensive review manuscript examining the application of artificial intelligence to electroencephalographic analysis, neurological-disorder detection, and brain–computer interfaces. The review was conducted across several manuscript-revision rounds and involved a detailed assessment of the scientific scope, methodological structure, literature-selection strategy, technical accuracy, clinical interpretation, and balance between neurological diagnosis and brain–computer interface applications. The evaluation examined whether the authors’ conclusions were adequately supported by the reviewed evidence and whether performance metrics reported for machine-learning and deep-learning models were presented consistently. Particular attention was given to the clarity of the manuscript’s research questions, the distinction between narrative and systematic review methods, the interpretation of EEG biomarkers, and the clinical limitations of artificial-intelligence-based diagnostic systems.

The reviewer provided structured recommendations addressing scientific terminology, methodological transparency, organisation of the literature, accuracy of quantitative results, figure quality, table consistency, reference integrity, and the need to distinguish demonstrated clinical performance from preliminary research findings.

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2-Peer Review of “AI-Driven EEG Biomarkers for Early Neurological Disorder Detection: A Comprehensive Review”

CONTRIBUTION SUMMARY

This peer-review contribution evaluated a comprehensive manuscript addressing artificial-intelligence-assisted EEG biomarkers for the early identification of neurological disorders. The review assessed the completeness of the literature coverage, the scientific accuracy of EEG terminology, the presentation of machine-learning methods, and the interpretation of reported diagnostic-performance measures.

The assessment examined whether the manuscript clearly differentiated between EEG signal-processing stages, feature-extraction techniques, conventional machine-learning models, and deep-learning architectures. The reviewer also evaluated the treatment of clinical disorders, dataset limitations, sample-size constraints, model generalisability, explainability, and the risk of overstating the readiness of artificial-intelligence systems for routine clinical use.

Constructive recommendations were provided to improve the organisation of the manuscript, clarify the review methodology, correct numerical and bibliographic inconsistencies, strengthen the discussion of clinical validation, and improve the relationship between the manuscript's tables, figures, and conclusions. Following the review process, the editorial decision communicated for one of the revised rounds was Minor Revision.

3- Critical Re-Evaluation of a Revised EEG and Artificial Intelligence Narrative Review

CONTRIBUTION SUMMARY

A subsequent revision of the manuscript was re-evaluated under the title "EEG and Artificial Intelligence Across Two Domains: A Narrative Review of Clinical Diagnosis of Neurological Disorders and Brain-Computer Interfaces." The review focused on determining whether the authors had adequately addressed the comments raised during the previous evaluation rounds.

The technical assessment identified unresolved numerical inconsistencies in the reported performance measures, including implausible values in comparative tables and conflicting percentages attributed to the same referenced studies. The review also identified inconsistencies between manuscript text, figures, tables, and cited references, as well as duplicate bibliographic entries and unresolved figure-quality issues.

The reviewer concluded that these problems affected the reliability and reproducibility of the scientific synthesis. A Major Revision recommendation was therefore issued, accompanied by detailed instructions requiring the authors to verify every quantitative value against its original source, correct table and figure inconsistencies, remove duplicate references, and ensure that the manuscript's conclusions accurately reflected the available evidence.

4- Quantitative Integrity and Reference-Verification Assessment in Scientific Peer Review

CONTRIBUTION SUMMARY

As part of the peer-review process, a structured research-integrity assessment was conducted to verify the internal consistency of quantitative results reported in a multidisciplinary EEG and artificial-intelligence review. The assessment involved cross-checking accuracy, precision, sensitivity, specificity, F1-score, and other model-performance values across the manuscript text, tables, figures, and reference list. The reviewer identified impossible or internally inconsistent performance values, conflicting numerical descriptions of individual studies, misleading table labels, duplicate references, and figures that did not fully correspond to their descriptions. These findings demonstrated the importance of treating peer review not only as a linguistic or conceptual evaluation but also as a technical verification process.

The resulting review recommendations emphasised source-level verification, consistent reporting of evaluation metrics, transparent differentiation between training and external-validation performance, and accurate representation of the limitations of clinical artificial-intelligence studies. This contribution reflects an evidence-auditing approach to scientific peer review, with particular emphasis on reproducibility and research integrity.

5- Assessment of Clinical Claims in AI-Assisted Neurological Research

CONTRIBUTION SUMMARY

This peer-review contribution examined the clinical claims made in research combining artificial intelligence, EEG biomarkers, and neurological-disorder detection. The evaluation distinguished between retrospective classification performance, experimental proof of concept, prospective clinical validation, and systems approved or ready for routine medical use.

The reviewer emphasised that high accuracy reported using limited or internally divided datasets should not automatically be interpreted as evidence of clinical diagnostic reliability. Recommendations addressed dataset heterogeneity, class imbalance, participant leakage between training and testing sets, absence of external validation, model explainability, demographic bias, and the need for collaboration between engineers, neuroscientists, and medical specialists.

The assessment encouraged the authors to present artificial intelligence as a clinical decision-support approach rather than a replacement for neurological assessment. It also recommended clearer reporting of ethical considerations, patient privacy, algorithmic bias, and the limitations associated with generalising EEG models across institutions, devices, populations, and neurological conditions.

6- Editorial Leadership and Peer-Review Governance at ENOSH Science Journal

CONTRIBUTION SUMMARY

As Editor-in-Chief of ENOSH Science Journal, Prof. Ibrahim El Noshokaty contributed to the development of the journal's editorial and peer-review governance framework. The work included defining the journal's scientific scope across acoustics, artificial intelligence, neuroscience, biomedical engineering, and applied sciences; developing manuscript-assessment criteria; structuring reviewer reports; and establishing editorial-decision categories.

The peer-review framework was designed to evaluate originality, methodological validity, technical accuracy, ethical compliance, statistical interpretation, data transparency, reference quality, and the relationship between conclusions and supporting evidence. Particular attention was given to avoiding conflicts of interest and maintaining a clear separation between authorship, independent review, and final editorial decision-making.

The editorial system also incorporated requirements concerning declarations of competing interests, data-availability statements, ethical approval, informed consent, authorship contributions, funding disclosure, plagiarism screening, and correction of the scientific record. This work supports the establishment of a transparent and internationally aligned peer-review environment within ENOSH Science Journal.

1 EVALUATION FRAMEWORK



Originality

Assesses novelty and contribution to the field.



Methodological Validity

Evaluates the appropriateness and rigor of methods.



Technical Accuracy

Ensures correctness of data, methods, and results.



Ethical Compliance

Verifies adherence to ethical standards and regulations.



Statistical Interpretation

Examines the validity of statistical analyses and interpretations.



Data Transparency

Confirms availability and clarity of data and materials.



Reference Quality

Checks relevance, accuracy, and completeness of references.



Conclusions & Supporting Evidence

Assesses whether conclusions are supported by the presented evidence.

2 INDEPENDENCE & CONFLICT OF INTEREST



Avoiding Conflicts of Interest

Reviewers declare and avoid any potential conflicts of interest.



Clear Separation of Roles

Authors, reviewers, and editors have distinct and independent responsibilities.



Independent Review & Editorial Decision

Editorial decisions are made independently based on reviewer recommendations.

3 EDITORIAL SYSTEM REQUIREMENTS



Declarations of Competing Interests

Authors and reviewers declare all potential competing interests.



Data Availability Statements

Authors provide clear information on data access and availability.



Ethical Approval

For research involving human or animal subjects.



Informed Consent

Confirmation of informed consent where applicable.



Authorship Contributions

Clear description of each author's contributions.



Funding Disclosure

Disclosure of all sources of financial support.



Plagiarism Screening

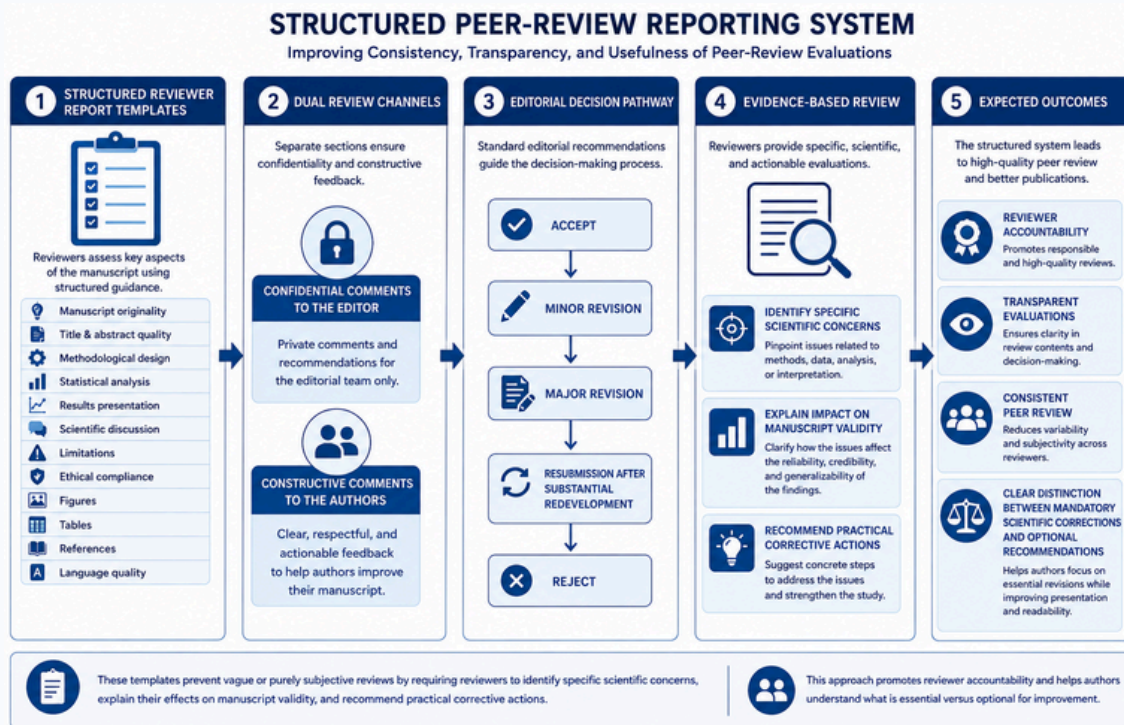
Manuscripts are screened for originality.



Correction of the Scientific Record

Mechanisms for corrections, retractions, and updates.

7- Development of Structured Reviewer-Report Templates



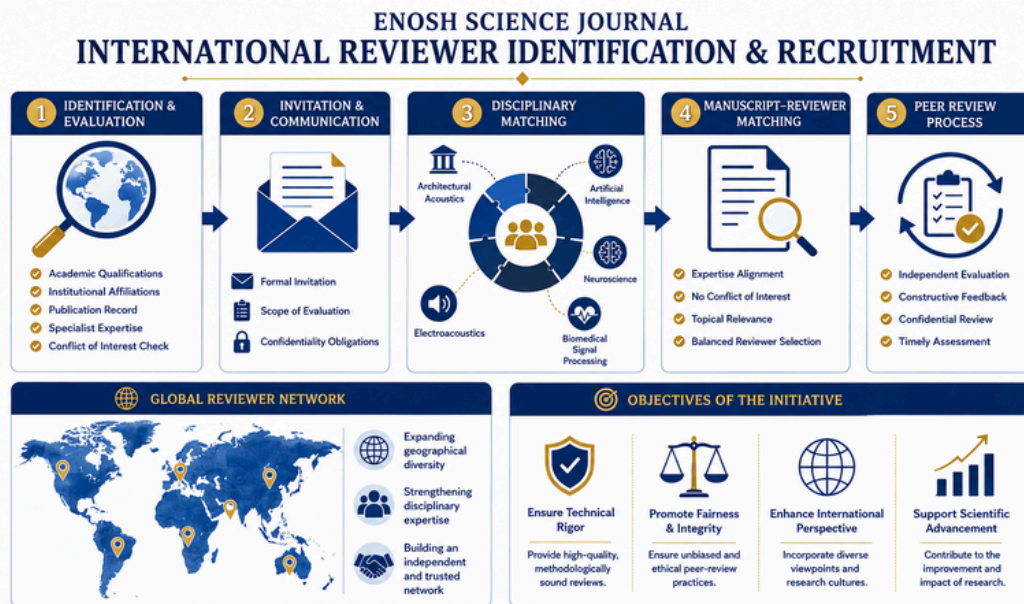
CONTRIBUTION SUMMARY

Structured reviewer-report templates were developed to improve the consistency, transparency, and usefulness of peer-review evaluations. The templates guide reviewers through the assessment of manuscript originality, title and abstract quality, methodological design, statistical analysis, results presentation, scientific discussion, limitations, ethical compliance, figures, tables, references, and language quality.

Separate sections were incorporated for confidential comments to the editor and constructive comments to the authors. The system supports the standard editorial recommendations of acceptance, minor revision, major revision, resubmission after substantial redevelopment, and rejection.

The templates were designed to prevent vague or purely subjective reviews by requiring reviewers to identify specific scientific concerns, explain their effects on manuscript validity, and recommend practical corrective actions. This approach promotes reviewer accountability while helping authors distinguish between mandatory scientific corrections and optional recommendations for improving presentation.

8- International Reviewer Identification and Recruitment for ENOSH Science Journal



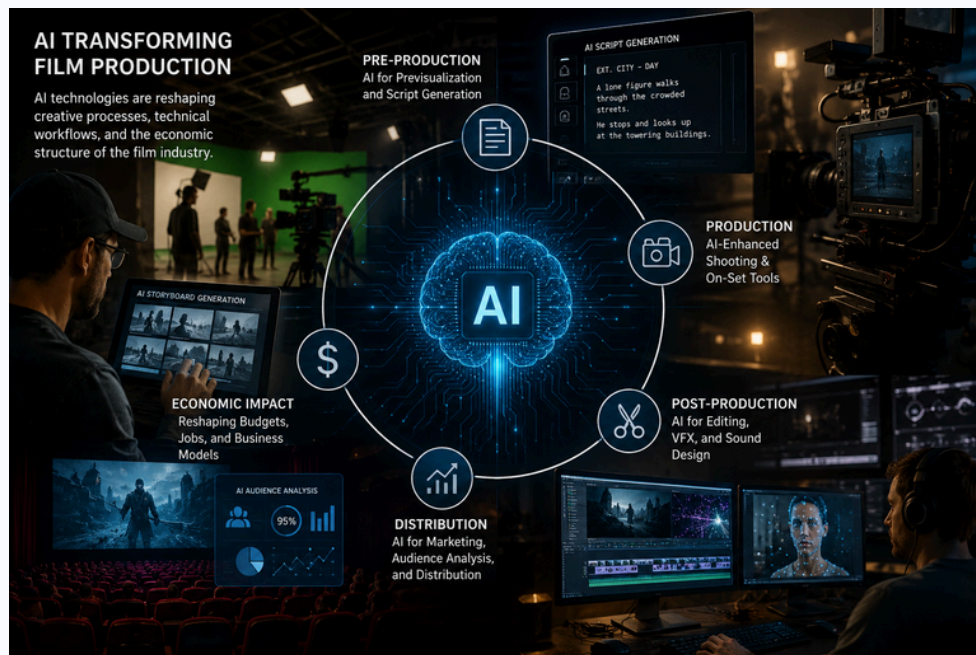
CONTRIBUTION SUMMARY

An international reviewer-identification and recruitment process was initiated to expand the disciplinary and geographical diversity of the ENOSH Science Journal peer-review network. Potential reviewers were evaluated according to their academic qualifications, institutional affiliations, publication records, specialist expertise, and absence of direct conflicts of interest with manuscript authors.

This process included preparing formal reviewer invitations, defining the expected scope of evaluation, communicating confidentiality obligations, and matching manuscripts with specialists in areas such as architectural acoustics, electroacoustics, artificial intelligence, neuroscience, and biomedical signal processing.

Among these activities was the preparation of a formal peer-review invitation for Dr. Alaa S. Algargoosh, a specialist in architecture and architectural acoustics affiliated with Virginia Tech. The broader objective of this initiative was to establish an independent reviewer network capable of providing technically rigorous, fair, and internationally informed assessments of submitted research.

9- The Expected Impact of Using Artificial Intelligence Techniques on Film Production



INTRODUCTION:

This study explores the expected impact of artificial intelligence (AI) technologies on the production of filming. It investigates how AI-based tools and algorithms are reshaping creative processes, technical workflows, and the economic structure of the film industry. The research is motivated by the exponential growth of AI capabilities and their increasing integration into all phases of film production, from previsualization and script generation to editing and distribution (all professional dynamics in the filmmaking process).

Research Problem:

The study addresses a central problem which is the lack of comprehensive academic analysis regarding the multidimensional effects of AI on cinema production. Despite the rapid advancements in technology, there remains a limited understanding of how these changes affect artistic integrity, creative control, and professional roles within the cinematic ecosystem. The main question is "How does artificial intelligence (AI) affect the processes, aesthetics, and economics of film production?" It also investigates the philosophical and ethical dilemmas posed by integrating AI into artistic creation.

Research Limitations:

The research is limited to films and tools that explicitly incorporate AI technologies, focusing on their influence on artistic, technical, and philosophical aspects. It excludes non-cinematic media or AI applications not directly related to the creative process of filmmaking.

The focus is primarily on narrative cinema rather than experimental or hybrid forms. **Research Hypotheses and Questions:** The research assumes that AI technologies will significantly reshape the creative workflow in cinema. Based on this hypothesis, the study explores various questions, including how AI alters traditional roles in film production and the extent to which it influences audience reception and narrative design. This study is guided by the assumption that AI represents both a transformative opportunity and a disruptive force in filmmaking. The research poses critical questions such as "How does AI alter the nature of cinematic creativity?" To what extent can AI-driven tools support or replace traditional filmmaking practices? What are the ethical and aesthetic implications of using AI in storytelling?

Research Objectives:

The research seeks to:

- Examine the applications of AI across pre-production, production, and post-production phases.
- Analyze how AI transforms the aesthetic and technical structure of films.
- Evaluate the economic, ethical, and philosophical consequences of AI's presence in cinema.
- Propose a critical framework for understanding AI-driven creative authorship.

Research Significance:

This study holds significance for scholars, filmmakers, and policy-makers who are navigating the intersection of technology and art. It contributes to the emerging discourse on digital cinema by providing critical insights into the integration of AI in film production. The findings are expected to support informed decisions and stimulate further academic inquiry into the role of intelligent technologies in creative industries, as it merges theoretical, aesthetic, technological, and economic analyses. It provides a forward-looking perspective on how AI may redefine creative autonomy and reshape the future of cinematic storytelling.

Research Methodology:

The study adopts a descriptive-analytical approach, supported by qualitative content analysis. It includes case studies of AI-generated films and integrates comparative methodologies to examine traditional and AI-assisted production models. Historical context is also considered to trace the evolution of AI in cinematic practices.

Key Findings:

The study has uncovered a set of critical findings that underscore the transformative impact of artificial intelligence on cinematic production. One of the most salient results is the growing reliance on AI technologies to enhance efficiency in filmmaking, especially in preproduction and post-production stages. Tools powered by machine learning and data analytics are reshaping how films are conceptualized, scripted, and edited, allowing for faster turnaround and higher precision in visual storytelling. Another pivotal finding is that AI facilitates cost optimization by automating repetitive tasks such as scene simulation, virtual casting, and editing assistance. This financial efficiency does not only reduce production budgets but also democratizes filmmaking by making advanced tools accessible to independent creators, thus expanding the diversity of voices in the cinematic landscape.

Recommendations:

To ensure a balanced integration of AI technologies in cinematic production, the study recommends that filmmakers adopt a proactive stance toward digital literacy. By acquiring a foundational understanding of how AI tools function, professionals can exercise greater creative control and ethical judgment in deploying these technologies.

Additionally, academic and industry collaborations should be encouraged to develop specialized training programs that bridge gaps between technological innovation and artistic practices. These programs can facilitate interdisciplinary fluency, equipping creators with the critical skills necessary to navigate an increasingly AI-driven landscape.

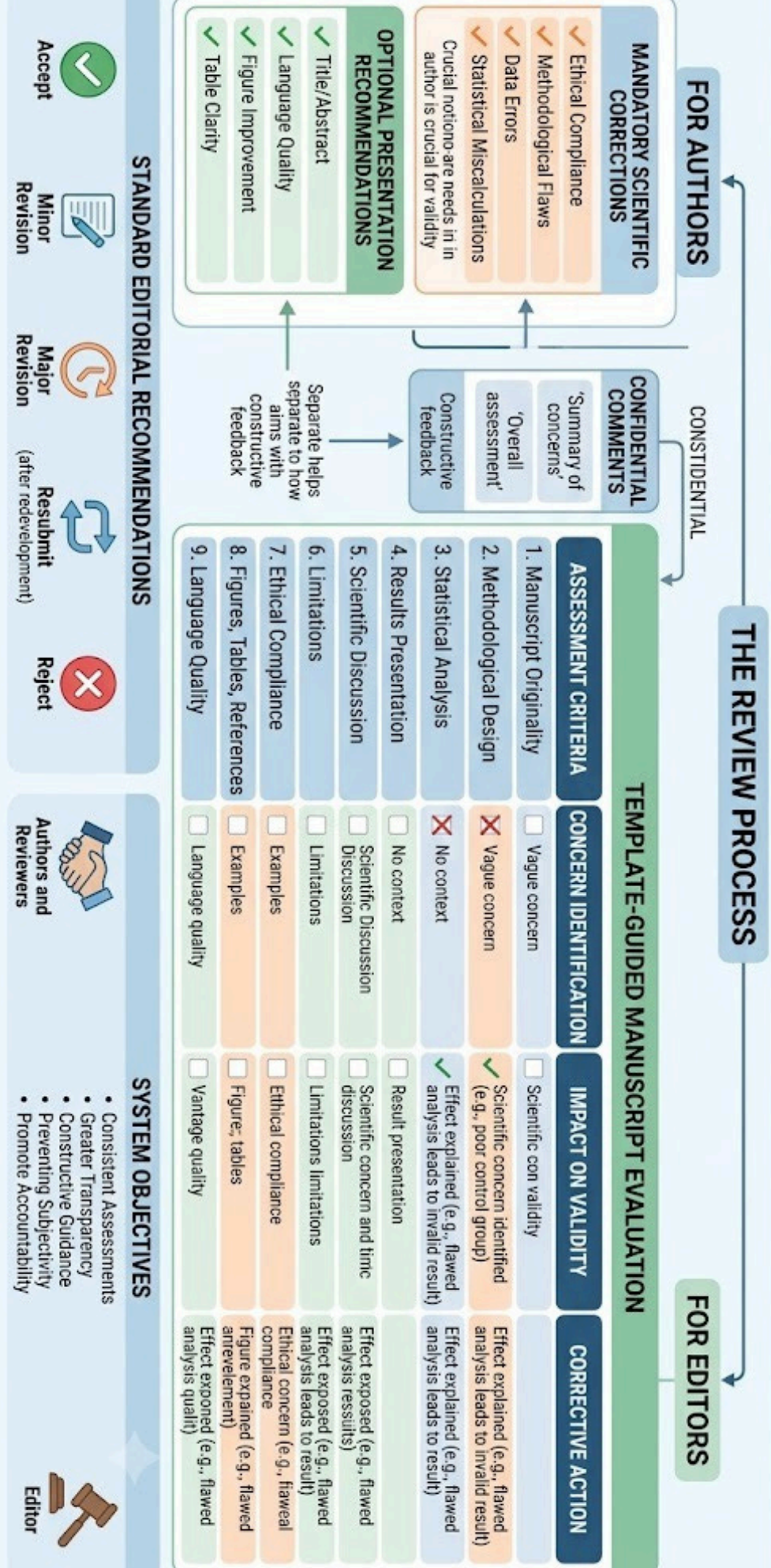
Structure of the Thesis: The thesis is organized into two main chapters. The first chapter addresses the conceptual and historical development of artificial intelligence and its applications in cinema, including pre-production, production, and post-production stages. The second chapter provides a critical analysis of practical applications, drawing from global and Arab cinematic experiences, and concluding with a discussion of the technological, economic, and artistic implications of AI integration.

SUMMARY OF PEER-REVIEW CONTRIBUTIONS

- **External review of research concerning EEG, neurological disorders, and artificial intelligence.**
- **Evaluation of original and revised manuscript versions across multiple review rounds.**
- **Verification of reported machine-learning and clinical-performance metrics.**
- **Detection of numerical, graphical, tabular, and bibliographic inconsistencies.**
- **Assessment of clinical claims and limitations of AI-assisted diagnostic research.**
- **Preparation of structured reviewer reports and editorial recommendations.**
- **Development of peer-review governance for ENOSH Science Journal.**
- **Preparation of international reviewer invitations and reviewer-selection criteria.**
- **Promotion of research integrity, methodological transparency, and reproducibility.**

STRUCTURED PEER-REVIEW TEMPLATE SYSTEM

Enhancing Consistency, Transparency, and Usefulness



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1000+



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20th Alexandria international psychiatry conference

PASSIVE HEARING ABILITIES OF DYSLEXIA CHILDREN: INVESTIGATING THE RUMBLE FREQUENCY OF SKULL BONES CAVITY

Dr. Manal Omar

Prof. A. of Psychiatry, Ain Shams Univ.

Dr. Howaida elgebaly

Prof. of Pediatrics, Ain Shams Univ.

Dr. Ibrahim Noshokati

Prof. of Electro Acoustic, Georgia State Univ.

20th Alexandria International Psychiatry Conference

17-18 July 2025



Audio vestibular medicine session (3)

15th Annual
conference of
EAVMA

EAVMA
Egyptian Audio-Vestibular Medicine Association
الجمعية المصرية لطب السمع والأتزان

Title : ADHD Interplay between sinuses clinical presentation and skull bone cavity resonance

Session Details: Audio-Vestibular Medicine session (3) "Emerging trends and new horizons of practice in audio-vestibular practice"

Presentation Time: Friday , Apr 3, 2026
3:15 PM - 3:28 PM

Presenting Author: Dr. Manal Omar
Ass. Prof. of Psychiatry, Ain Shams Univ.
Dr. Howida Elgebaly
Prof. of Pediatrics, Ain Shams Univ.
Dr. Ibrahim Noshokaty
Prof. of Electro Acoustic, Georgia State Univ

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INTRODUCTION ON

ADHD prevalence 9.4 – 21.8%

- Recent studies have found that **E.N.T.** conditions → may lead to high incidence of **ADHD** (Wei et al., 2025)
- Fluctuating hearing sensation → great effect on immature **Central Auditory System**, associated with L.D. & ADHD (Al Sandra et al., 2025)
- Oral breathing → cause significant changes in anatomical **Maxillofacial Area** (Ahmadi et al., 2016)

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المؤتمر العلمي الدولي 9 بأكاديمية الفنون



طبيعة العرض: دراسة تطبيقية منهجية
مختلطة لتقييم نصوص روائية وُلدت آلياً
دون تدخل تحريري بشري.

تقييم السرد الروائي المولّد بالذكاء الاصطناعي: رواية «المعبد» نموذجاً

بروتوكول قابل للتكرار ومصنوفة قياس لتماسك السرد، استمرارية الشخصيات، والأصالة

الباحثين هم:

- الدكتور إبراهيم النشوقاتي - قسم الصوتيات و الذكاء الاصطناعي Enosh Science Center
- الدكتورة منال عمر - استاذة الطب النفسي بكلية الطفولة جامعة عين شمس
- الدكتورة الشيماء رجائي - قسم الصوتيات و الذكاء الاصطناعي Enosh Science Center

• هدير محمد - قسم الصوتيات و الذكاء الاصطناعي Enosh Science Center
• كريم اسامه - قسم الصوتيات و الذكاء الاصطناعي Enosh Science Center

elmaabd (1)

لماذا رواية «المعبد»؟ إشكالية الكتابة المولدة آلياً

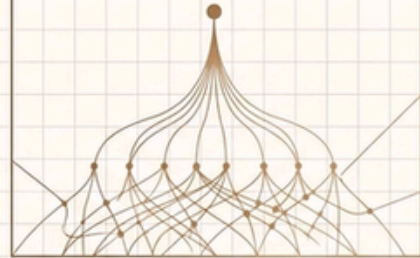
حالة الدراسة

«المعبد» كنص عربي وُلّد بالكامل عبر نظام ذكاء اصطناعي ضمن عالم روائي مُسبق التصميم ذي حدود أخلاقية.

وُلّد النص دون أي تدخل تحريري لاحق

تحول النموذج

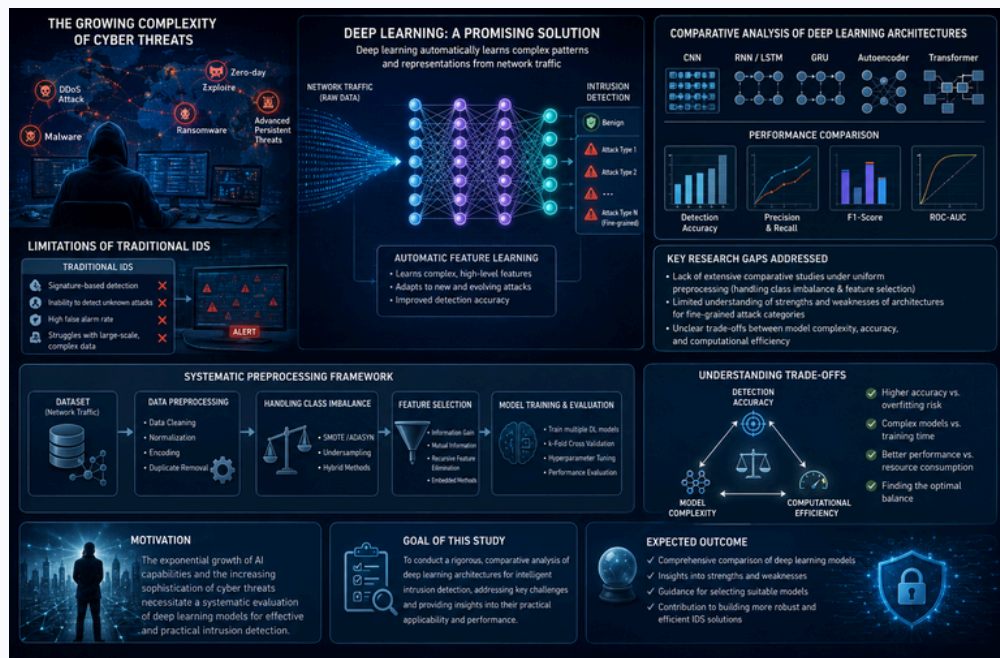
الانتقال من الكاتب الفرد إلى النماذج اللغوية الكبيرة (LLMs) القادرة على إنتاج نصوص سردية ممتدة.



تساؤل الإشكالية: هل يمكن للنص المولّد آلياً الحفاظ على تماسك سببي وتطور منطقي للشخصيات دون تفكك؟ وكيف نقيس ذلك بعيداً عن الانطبعية؟

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A DEEP LEARNING APPROACH FOR INTELLIGENT INTRUSION DETECTION



ABSTRACT

The growing complexity of cyber threats calls for network security adaptation that goes beyond conventional Intrusion Detection Systems (IDS), which try in vain to comply with new, sophisticated attacks and comprehensive data. Deep learning provides a great perspective for improving IDS through automatic learning of complex feature representation from network traffic. This thesis is inspired by the necessity to systematically analyze different deep learning architectures for intelligent intrusion detection to get information on their practical usage and performance.

Previous studies about deep learning in the context of IDS have experimented with different models, but extensive comparative studies under uniform systematic preprocessing particularly addressing extreme class imbalance and stringent feature selection are less encountered.

There are still voids in explaining the exact strengths and weaknesses of different architectures when differentiating an enormous set of fine-grained attack categories. Furthermore, the overall trade-offs of model complexity, detection accuracy, and computational efficiency are not always explicitly defined. This study will seek to achieve these through a rigorous, comparative analysis. This research tests and compares four deep learning models: a 2D Convolutional Neural Network (2D CNN), a Multi-Layer Perceptron (MLP), TabNet, and a hybrid CNN-Bidirectional Long Short-Term Memory (CNN-BiLSTM) network, on the preprocessed UNSW-NB15 benchmark dataset for both multi-class and binary (Normal vs.

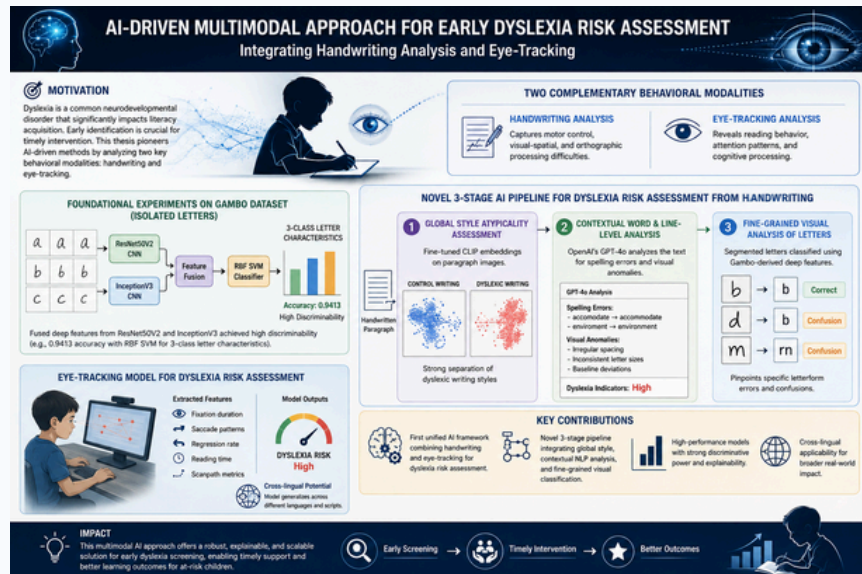
Attack) classification. The findings indicate a clear performance hierarchy in multi-class detection, where the CNN-BiLSTM achieved the highest accuracy of 91.3% and a macro F1-score of 0.900, followed by TabNet with 85.7% accuracy and a 0.831 macro F1-score.

The 2D CNN and MLP models yielded accuracies around 81.5-81.6%. In the binary task, all models performed exceptionally well, with the CNN-BiLSTM reaching 98.9% accuracy. However, most models, apart from the CNN-BiLSTM, faced difficulties reliably distinguishing similar attack types in the multi-class context. A distinct trade-off between model complexity, classification performance, and computational efficiency was observed, with the hybrid CNN-BiLSTM offering superior accuracy at the cost of longer training time (approx. 100 minutes), while simpler models like TabNet trained faster (approx. 24 minutes) but with comparatively lower peak accuracy. This work highlights the critical role of architecture selection and identifies key areas for enhancing fine-grained attack discrimination.

Author : Ziad Amgad

AI BASED SKILL BUILDER FOR DIGITAL ART

HOLISTIC HANDWRITING ANALYSIS FOR DYSLEXIA RISK: A 3-STAGE AI PIPELINE ALONG WITH EYE-TRACKING CROSS-LINGUAL APPLICATION



ABSTRACT

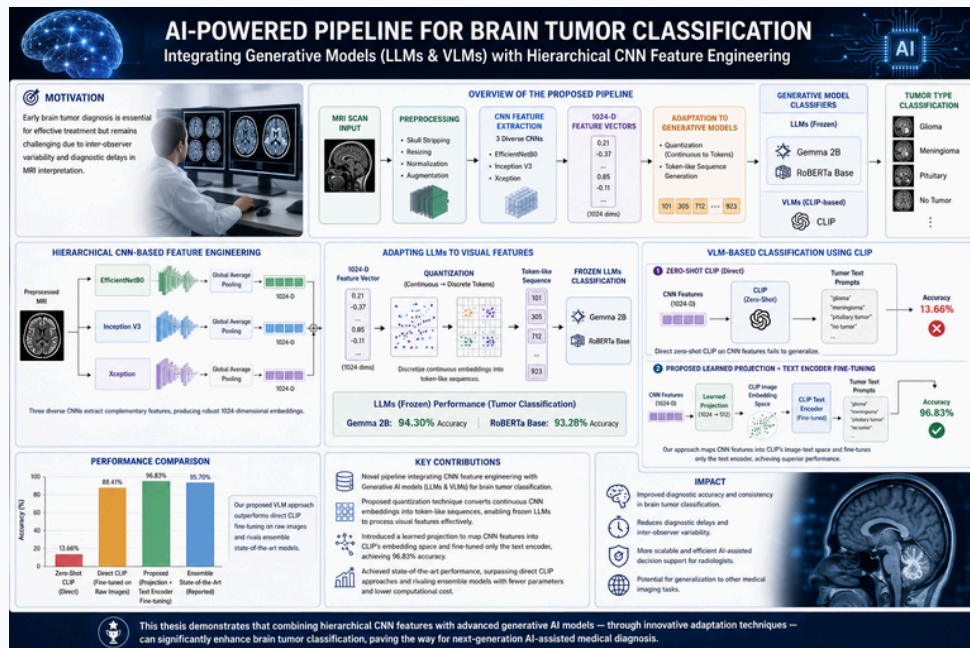
Dyslexia, a common neurodevelopmental disorder significantly impacting literacy acquisition, necessitates robust early screening methods. This thesis pioneers AI-driven approaches for identifying dyslexia risk indicators by comprehensively analyzing two key behavioral modalities: handwriting and eye-tracking. Handwriting analysis was advanced through foundational experiments on the Gambo isolated letter dataset, where fused features from ResNet50V2 and InceptionV3 CNNs achieved high discriminability (e.g., 0.9413 accuracy with RBF SVM for 3-class letter characteristics). These insights informed the development of a novel 3-Stage AI Pipeline for Dyslexia Risk Assessment from Handwriting.

This pipeline uniquely integrates: (1) Global style atypicality assessment using fine-tuned CLIP embeddings on paragraph images, which demonstrated strong separation of dyslexic writing styles; (2) Contextual word and line-level analysis via OpenAI's GPT-4o, effectively identifying spelling errors and visual anomalies more prevalent in dyslexic samples; and (3) Fine-grained visual analysis of segmented letters using a classifier trained on the Gambo-derived features to pinpoint specific letterform errors. Concurrently, an eye-tracking model was developed to assess dyslexia risk and its cross-lingual potential.

While initial BiLSTM explorations provided a baseline, the primary pipeline utilized a Convolutional Autoencoder (AE) trained on gaze-path images from a Czech (Benfatto-derived) dataset. This research validates the potential of distinct, specialized AI pipelines for extracting nuanced behavioral markers of dyslexia from both handwriting and eye-tracking data. The proposed 3-Stage handwriting framework offers a structured, multi-level analytical approach, while the AE-based eye-tracking model shows promise for feature learning from gaze dynamics. Findings underscore the importance of domain-specific feature engineering and highlight challenges in dataset integration and cross-domain generalization, therefore shwowing critical directions for future development of comprehensive and accessible dyslexia screening technologies.

Author : Abdel Rahman Emad

REVOLUTIONIZING BRAIN CANCER DETECTION USING GEN



ABSTRACT

Early brain tumor diagnosis is essential for effective treatment but remains challenging due to inter-observer variability and diagnostic delays in MRI interpretation. This thesis presents a novel pipeline integrating advanced Generative AI models — specifically Large Language Models (LLMs) and Vision-Language Models (VLMs) - with a hierarchical CNN-based feature engineering approach for brain tumor classification.

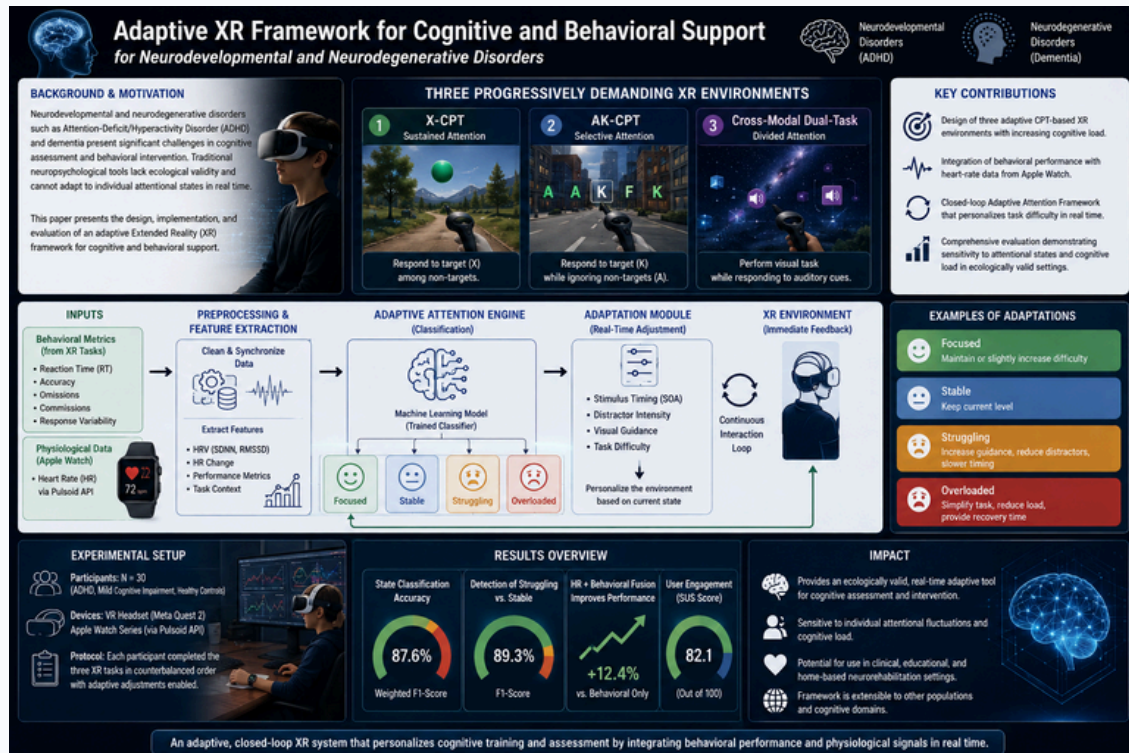
MRI scans are preprocessed and passed through three diverse CNNs (EfficientNetB0, Inception V3, Xception), producing robust 1024-dimensional feature vectors. To adapt LLMs for visual input, we introduce a quantization technique that discretizes these continuous embeddings into token-like sequences, enabling frozen LLMs (Gemma 2B and RoBERTa Base) to classify tumor types with up to 94.30% accuracy.

In parallel, we explore VLM-based classification using CLIP. A direct zero-shot approach fails (13.66% accuracy), but we propose a learned projection that maps CNN features into CLIP's image-text embedding space.

Fine-tuning only the CLIP text encoder achieves 96.83% accuracy — outperforming direct CLIP fine-tuning on raw images and rivaling ensemble state-of-the-art models. Our results demonstrate that when coupled with engineered domain-specific features and minimal adaptation, powerful Gen AI models can significantly improve medical image classification performance. The framework is efficient, interpretable via cosine similarity probing, and opens new paths for explainable and scalable medical AI systems.

Author : Marwan Mostafa

LEVERAGING IMMERSIVE XR FOR COGNITIVE AND BEHAVIORAL SUPPORT



ABSTRACT

Neurodevelopmental and neurodegenerative disorders such as Attention-Deficit/Hyperactivity Disorder (ADHD) and dementia present significant challenges in cognitive assessment and behavioral intervention. Traditional neuropsychological tools lack ecological validity and cannot adapt to individual attentional states in real time. This paper presents the design, implementation, and evaluation of an adaptive Extended Reality (XR) framework for cognitive and behavioral support. The system comprises three progressively demanding virtual reality environments, each embedding a distinct Continuous Performance Task (CPT) variant: X-CPT, AK-CPT, and a cross-modal Dual-Task paradigm. Behavioral metrics and heart-rate data from an Apple Watch (via Pulsoid API) were combined in a closed-loop Adaptive Attention Framework that classifies participants as Focused, Stable, Struggling, or Overloaded, adjusting stimulus timing, distractor intensity, and visual guidance in real time.

Evaluation with 20 healthy adult participants confirmed differential attentional demands across environments. The Cafeteria dual-task condition produced the lowest hit rate (78.5%), highest omission rate (21.5%), and highest false alarm rate (9.39%), with a statistically significant environment effect on omission rate ($\chi^2(2) = 11.39, p = 0.003$). K-Means clustering independently identified three coherent performance profiles. Subjective evaluations confirmed increasing perceived workload NASA-TLX: (1.58 → 2.31 → 5.01), minimal cybersickness (SSQ: 5.20), and good usability (SUS: 76.75%), establishing the framework as a feasible foundation for future clinical application.

Author : Hebtallah Mohamed

DESIGN, DEVELOPMENT, AND PRELIMINARY EVALUATION OF AN EXTENDED REALITY REHABILITATION SYSTEM FOR PERSISTENT POSTURAL-PERCEPTUAL DIZZINESS



ABSTRACT

Persistent Postural-Perceptual Dizziness (PPPD) is a chronic vestibular disorder characterized by persistent dizziness, imbalance, and heightened sensitivity to visually complex environments. Conventional rehabilitation approaches often lack the capacity to provide safe, controlled, and adjustable exposure to the sensory triggers that drive PPPD symptoms. This paper presents an immersive Extended Reality (XR) rehabilitation prototype designed to facilitate gradual exposure therapy for PPPD through an integrated combination of Virtual Reality (VR) and Augmented Reality (AR) environments.

The system was developed in Unity and deployed on the Meta Quest 2 headset. The prototype comprises three progressive VR rooms: an empty adaptation room, a static-objects room, and a task-based interaction room connected by virtual hallways, followed by AR gaze Stabilization training across three complexity levels and AR floor-pattern desensitization across two levels, complemented by a virtual-nature relaxation scene.

An initial evaluation was conducted with 15 healthy participants using a modified 15-item Simulator Sickness Questionnaire (SSQ) administered pre- and post-session, and the System Usability Scale (SUS) administered post-session.

The mean SUS score was 71.17, indicating acceptable usability. The adjusted SSQ total score rose from 40.91 pre-session to 48.10 post-session, with the Disorientation subscale showing the largest increase (46.49 to 58.46), confirming that the system successfully engaged PPPD-relevant visual-vestibular triggers. These results indicate that the prototype is usable and clinically motivated, while highlighting the need for refined AR scene design, multi-session testing, and validation with clinically diagnosed PPPD patients.

Index Terms Persistent Postural-Perceptual Dizziness, Extended Reality, Virtual Reality, Augmented Reality, Vestibular Rehabilitation, Simulator Sickness Questionnaire, System Usability Scale, Meta Quest 2, Gradual Exposure Therapy.

Author : Rawan Mohamed

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