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Journal Abstracts

January 2026

Sl. No	Article	Author	Source	Year
1	Small Signal and Large Signal Analysis of 150 nm GaN HEMT with Optimized Field Plates for Ku-Band Application	*Anupama Anand, Rakhi Narang, Dipendra Singh Rawal, Meena Mishra ,Manoj Saxena &Mridula Gupta*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: This manuscript explores the small signal and large signal analyses of a 150 nm GaN HEMT with various field plate architectures, including gate field plate (GFP), source field plate (SFP), air-bridge source connected field plate (ABSCFP), and floating gate field plate (FGFP). These field plates were optimized for Ku-Band operation as demonstrated by prior research. An improved small signal equivalent circuit for FGFP architecture is presented, applicable to similar field plate designs. For other topologies, traditional methods are utilized. Bias-dependent intrinsic parameters were examined across field plates, revealing significant changes in intrinsic capacitances, which influence reduction in cut-off frequency (fT) and maximum oscillation frequency (fMax.). In large signal analysis, RF power performance of these architectures was explored. Notably, ABSCFP HEMT achieved promising results with saturated output power (Psat) of 1.69 W/mm, gain of 19.93 dB, and power-aided efficiency (PAE) of 35.97%, comparable to devices with higher off-state breakdown voltage (VBoff = 112 V). These findings underline the importance of selecting suitable field plate topology based on application constraints, emphasizing the impact of architectural choices on performance metrics like efficiency, capacitances, and breakdown voltage. The results are useful for optimizing field plates for specific high-frequency applications.

Sl. No	Article	Author	Source	Year
2	A Two-Dimensional Wavelet Attention U-Net for the Automatic Detection and Classification of Beehive Cells	*Neha Rathore, Dheraj Kumar Agrawal*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: In apiculture, the analysis of beehive cells is important for the diagnosis of bee health and brood pattern. Although various automated beekeeping techniques have emerged utilizing sound and environmental parameters, the existing approaches are inadequate for visual analysis. In this paper, we propose a novel method for automatic identification and classification of cells by developing a two-dimensional wavelet attention U-Net (2D-WA UNet) cascaded with MobileNet. Wavelet attention module decomposes preprocessed images into sub-band images (SBIs), enabling concurrent learning of boundary features and texture from spatial and frequency domains to segment the Region of Interest (ROI). Further, we employ Circle Hough Transform (CHT) to identify and count cells in the ROI. Finally, detected cells are classified into five classes using a neural network. The experimental results attain a significant level of accuracy in the localization of cells with an accuracy of 99.26% and an average cell classification accuracy of 93.45%. The observed findings highlight the efficacy and reliability of our methodology in accurately analyzing hive cells.

Sl. No	Article	Author	Source	Year
3	Comparative Assessment of Conventional, Hybrid, and Novel Asymmetric and Symmetric Physical Relocation PV Arrangements Under Shading Conditions	*Anurag Singh Yadav, Ajay Kumar Maurya, Mukherjee*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: The arrangements of photovoltaic (PV) modules are play a significant role during shading circumstances (SCs). In this paper, two novel arrangements are proposed, named as, asymmetric, and symmetric arrangements. Their electrical profiles are compared with two different types of existing PV arrangements are presented. In comparison of existing PV arrangements, the locations of PV modules of proposed arrangements are physically relocated. Also, the conventional PV formations include TCT, HC, BL, and SP type, and hybrid configurations developed by a combination of conventional PV formations include SP-TCT, BL-TCT, and BL-HC. Moreover, the asymmetric physical relocation arrangement (APRA) applies to PV formations with an odd number of rows. Whereas, the symmetric physical relocation arrangement (SPRA) is suitable for both types of PV formations, odd and even row numbers. Simulations are conducted under various SCs to evaluate the effectiveness of the proposed techniques.

Sl. No	Article	Author	Source	Year
4	Comprehensive Analysis of Hybrid Approaches to Li-Fi and LPWAN Systems for IoT with Satellite-Assisted Communication	*Puput Dani Prasetyo Adi, Kevin Stekelorom, Elhadj Dogheche, Nasrullah Armi, Denis Remiens &Iyad Dayoub*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: Healthcare access remains a persistent concern for populations globally, particularly in remote areas. While telemedicine has emerged as a solution for addressing medical deserts in non-urban regions, the current priority is developing more sophisticated tools for disease identification and establishing efficient systems for transmitting medical data to hospitals and healthcare centers. Healthcare requires fast, accurate, and real-time medical data transmission. LPWAN with LoRa modules offers long-distance transmission solutions, requiring antennas above buildings and trees to overcome the Fresnel Zone issues. LoRa data rates vary from 366 bps (SF12, 125 kHz) to 6,836 bps (SF7, 125 kHz), while LiFi serves as an alternative with speeds up to 5 Gbps for point-to-point transmission of patient X-rays or medical videos. This research develops a Cross Technology Communication (CTC) system that integrates Li-Fi and LoRaWAN protocols for Internet of Medical Things (IoMT) applications. The main challenge in

medical data transmission is the varying bandwidth requirements, with low bandwidth data, such as in the case of heart rate and SpO2, and data with high bandwidth requirements, such as radiography and tumor videos. The proposed hybrid system utilizes the wide bandwidth of Li-Fi (up to 1 Gbps) and the wide coverage of LoRaWAN with specific CTC methods: Direct Translation, Packet-Level CTC, Physical Layer CTC, and Gateway-based CTC. Our research presents a comprehensive theoretical analysis of LPWAN satellite communication. This approach effectively addresses the persistent challenges in Non-Terrestrial Communication (NTC). The contribution of this research is the optimization of medical data transmission.

Sl. No	Article	Author	Source	Year
5	Feature Optimization and Stacked Ensemble Learning for Parkinson's Disease Classification Using Speech Analysis	*Sneha Agrawal &Satya Prakash Sahu*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: Parkinson's Disease (PD) is the second most common neurodegenerative disorder, whose symptoms worsen over time, making early diagnosis a challenging task. Changes in speech have been identified as an early symptom of PD identification. However, medical datasets often have a small sample size, while speech signal analysis generates high-dimensional data. Therefore, rigorous feature selection is essential for obtaining the best set of PD characteristics. This paper proposes a hybrid filter-wrapper feature selection approach for PD classification using a publicly available speech dataset (188 PD, 64 healthy subjects). Maximum Relevancy Minimum Redundancy (mRMR) and Relief algorithms are used to select top-ranked features, followed by the Modified Whale Optimization Algorithm (mWOA) to refine the selection for obtaining an optimized feature subset. The class imbalance issue is addressed using SMOTE. A stacked ensemble model is developed, integrating base learners, Decision Tree, Support Vector Machine, Naïve Bayes, k-Nearest Neighbour, and deep networks like shallow and deep with hyperparameters tuned via a grid search mechanism. The proposed approach is evaluated against state-of-the-art methods based on accuracy, precision, recall, and F1-score. Results demonstrate that hybrid feature selection and hyperparameter tuning reduce computational burden while improving classification accuracy, making it a promising framework for PD detection from speech data.

Sl. No	Article	Author	Source	Year
6	A Compact Wideband High Isolation Elliptical Slot Loaded Two-Port MIMO antenna for 5G n77/n78/n79 Band Applications	*Sudharani Chidurala &Prakasa Rao Amara*	IETE Technical Review Vol: 42 No: 5	2025

Abstract: A compact and high-isolation two-port MIMO antenna based on an offset-fed elliptical slot is proposed for 5G sub-6 GHz (n77/n78/n79 band) applications. The proposed antenna comprises two circular radiators with an elliptical slot, integrated into a compact layout. It occupies an area of 36 × 26 mm2, corresponding to an electrical size of 0.36 λ0 × 0.26 λ0 at 3.07 GHz, justifying its compact and low-profile nature. Enhanced impedance matching is achieved through offset feeding, resulting in a wide impedance bandwidth of 3.07–5.20 GHz (S11<−10 dB), with isolation better than −21 dB across the band. The antenna achieves stable gain between 4.2 and 4.5 dBi, and radiation efficiency ranging from 96% to 99% across the operating band. MIMO diversity metrics evaluated over the 3.07–5.20 GHz band confirm excellent performance, with Envelope Correlation Coefficient (ECC) < 0.005, Diversity Gain (DG) > 9.99 dB, Channel Capacity Loss (CCL) < 0.3 bits/sec/Hz, Total Active Reflection Coefficient (TARC) below −10 dB, and Mean Effective Gain (MEG) within −3 dB. The antenna is fabricated and experimentally validated, and the measured results show good agreement with simulations, confirming the suitability of the design for 5G sub-6 GHz MIMO applications.

Sl. No	Article	Author	Source	Year
1	Efficient Security and AI Defence Mechanisms in Cyber Networks	*Farhan Nisar, Baseer Ali Rehman, Sana Shafiq, Shum Yee Chan, Rabina Safi*	Journal of Information Security Research Vol: 16 No: 4	2025

Abstract: The document examines cloud computing security challenges, emphasizing that misconfigurations, weak identity controls, insecure APIs, and DoS/DDoS attacks are among the most critical vulnerabilities in modern cloud environments. It highlights that human error not platform flaws is the primary cause of breaches, underscoring the need for robust policy-based defenses. The study's main contribution involves analyzing various DoS attack types (volumetric, protocol based, and application layer), enhancing edge router security through ACLs, rate limiting, and deep packet inspection, and validating these measures in a GNS3 network simulation environment. Key experiments demonstrate that disabling Cisco Discovery Protocol (CDP), enabling DHCP snooping, and applying port security effectively mitigate ICMP floods, rogue DHCP servers, and reconnaissance threats. The paper validates established best practices such as those from Cisco rather than proposing novel cryptographic or architectural solutions. While results show 100% mitigation of specific attacks under controlled conditions, limitations include the lack of real-world deployment, the absence of AI despite the title's implication, a narrow threat scope, and a simplified network topology. Future work recommends testing in live multi cloud

infrastructures, integrating AI driven anomaly detection for adaptive policy enforcement and developing context aware threat models for hybrid cloud ecosystems. Overall, the research provides practical, simulation backed evidence that foundational Layer 2/3 security configurations significantly improve resilience against common network layer threats in cloud infrastructures.

Sl. No	Article	Author	Source	Year
2	Risk Management in Organizational Accounting based on Project Management Maturity Model	*Zhengkun Yan*	Journal of Information Security Research Vol: 16 No: 4	2025

Abstract: The paper explores the integration of the Organizational Project Management Maturity Model (OPM3) into the internal control framework of enterprise accounting information systems. It emphasizes that weak internal controls exemplified by historical corporate scandals like Enron and WorldCom can lead to financial misreporting, loss of investor confidence, and even bankruptcy. The study argues that robust internal controls are now essential for corporate governance, strategic decision making, and accessing capital markets, especially for Chinese firms seeking overseas listings. Using OPM3 a framework developed by the Project Management Institute the paper constructs a tailored internal control model for accounting information systems in a digital environment. It identifies critical control points across five COSO based components: control environment, risk assessment, control activities, information and communication, and monitoring. Through a case study involving 40 participants, the author applies a fuzzy evaluation method to assess maturity levels, finding the organization operates between basic and standardized levels (scoring 2.86 out of 5). The paper concludes with practical recommendations: clarifying role segregation, implementing password protocols, establishing reward punishment mechanisms, creating risk early warning systems, and strengthening corporate culture to enhance internal control effectiveness and transform risks into strategic opportunities.

Sl. No	Article	Author	Source	Year
3	An Optimized Z-Score Financial Early-Warning Model for Foreign Trade Enterprises Using Stochastic Optimization Algorithm	*Hong Guo, Lifang Liu*	Journal of Information Security Research Vol: 16 No: 4	2025

Abstract: The paper proposed a model to assess and predict financial risks in Chinese foreign trade listed companies. Recognizing limitations in the traditional Altman Z-Score model such as low diagnostic accuracy the authors integrate the Stochastic Optimization Algorithm (SOA) to fine tune the model's coefficients. Using financial data from 20 listed firms and a five-year case study of Jiangsu Sainty Co., Ltd. (2012–2016), they demonstrate that the SOA optimized Z-Score model significantly improves prediction accuracy, achieving a 96.33% recognition rate outperforming SVM and AdaBoost algorithms. The analysis reveals key financial indicators (e.g., retained earnings, EBIT, and asset turnover) critically influence risk levels. Based on findings, the authors recommend enterprises establish robust risk control systems, optimize capital structures, improve working capital management, and enhance profitability. The study underscores the value of combining classical financial models with modern optimization techniques for more reliable, adaptive financial risk assessment in dynamic market environments.

Sl. No	Article	Author	Source	Year
1	A low energy FPGA based wireless sensor node for real time event driven control with hardware only architecture	*Silvano Seva, Claudia Esther, William, Alberto Leva*	International Journal of Web Applications Vol: 17 No: 3	2025

Abstract: The paper presents a low energy FPGA based wireless sensor node designed for real time event-based control systems, eliminating the need for microcontrollers or software components. The sensor operates on a star network topology and employs a fully hardware based, hardwired logic design to enhance energy efficiency and security. By eliminating software, the system reduces power consumption and becomes resistant to reprogramming attacks, making it suitable for industrial IoT applications. The node employs a TDMA communication scheme for precise timing and low life,featuring a low power section that continuously samples and filters sensor data, and a high-power section activated only during event triggered transmissions. Events are detected using a" send on Delta" rule. The prototype was tested in a closed loop temperature control system, demonstrating effective performance with minimal transmissions. Future work aims to extend support to mesh networks, bi-directional communication, and additional event triggering rules.

Sl. No	Article	Author	Source	Year
2	Predictable real-time task migration for heterogeneous many – Core Systems with composable Architectures	*Behnaz Pourmohseni, Fedor Smirnov*	International Journal of Web Applications Vol: 17 No: 3	2025

Abstract: This paper presents a novel approach to enable the migration of challenging realtime tasks in composable many core systems, addressing dynamic events such as thermal hotspots or faults. Unlike existing methods, which are limited to soft real time or intratile migrations, this work introduces a predictable migration mechanism compatible with distributed memory architectures and both intra and intertile migrations. The mechanism compatible with distributed memory architectures and both intra and intertile migrations. The solution comprises three key contributions:(i)a non pre emptive migration mechanism using fat binaries for heterogeneity support (ii)a lightweight, online worst-case migration timing analysis, and (iii) a real time feasibility check that verifies migration safety against application deadlines and post migration timing changes. The approach ensures temporal predictability by leveraging system composability, allowing timing guarantees without static reanalysis. Experimental results on heterogeneous many core platforms show that the proposed method achieves significantly higher success rates in thermal management scenarios compared to state of the art mapping reconfiguration, with low computational overhead, demonstrating its feasibility and effectiveness for adaptive hard real time embedded systems.

Sl. No	Article	Author	Source	Year
3	Challenges and opportunities in real-time systems for industry 4.0: towards adaptive and predictable resource management,	*Silvano Seva, William Fornaciari, Alberto Ieva*	International Journal of Web Applications Vol: 17 No: 3	2025

Abstract: The paper discusses emerging challenges in real time systems, particularly within the context of industry4.0 and cyber physical systems, where dynamic and unpredictable workloads complicate resource management. It highlights the limitations of traditional real time scheduling when dealing with non-uniform task arrivals and bursty workloads, emphasizing the need for adaptive mechanisms that maintain timing

Sl. No	Article	Author	Source	Year
1	Multi-level efficiency itemsets Mining (MLHEIM)using Hierarchical Taxonomy Quang-Thinh Bui.	*Quang-Thinh*	Journal Of Intelligent Computing Vol: 16 No: 3	2025

Abstract: High-efficiency itemset mining (HEIM)is an inniovative challenge with relevance in studying user habits. HEIM addresses the investment associated with each product, proving to be particularly beneficial in the retail sector. Despite the high performance of HEIM algorithms in resolving issues, they do not account for the hierarchical information of products within the retail framework. Taxonomy serves as a vital data repository, uncovering valuable insights that conventional algorithms often miss. This paper introduces the concept of multi-level efficiency Itemsets mining from a database enriched with taxonomy information. Additionally, the paper details the process of calculating the investment for generalized items derived from their leaf nodes. To tackle the MLHEIM challenge, the paper puts forward an algorithm named “Method for Multi-level High –efficiency itemset mining (MLHEM)”; this algorithm integrates search space pruning strategies, including MLEECS,which is an advancement of EECS. According to the experimental findings. The MLHEM algorithm can proficiently address the MHLHEM problem, and the results improve even further when paired with the proposed methodologies.

Sl. No	Article	Author	Source	Year
2	An approach for sentiment analysis using balanced learning.	*Phuong Nguyen, Van-Huu Tran, The-Bao Nguyen, Hung Ho-Dac*	Journal Of Intelligent Computing Vol: 16 No: 3	2025

Abstract: Sentiment analysis is a field of study in natural language processing (NLP). This study proposes an approach to data processing, feature extraction, data balancing, and training using four machine learning models: Multinomial NaÃ¯ve Bayes, Random Forest, Support Vector Machine, and Decision Tree. Firstly, the dataset selected in the paper comprises the Internet Movie Database (IMDb), Twitter US Airline Sentiment (US Airline), and SemEval 2017. Second, data processing, feature extraction, and data balancing are employed to improve the accuracy of the training dataset. Specifically, data balancing is performed using the K-means SMOTE method, which has been proven effective for classification. Finally, the standard feature sets are applied to four machine learning models for training. The experimental results indicate that the SVM model achieves the highest accuracies of 89%, 96%, and 75% on the IMDb, US Airline, and Sem Eval 2017 datasets, respectively, compared to other state-of-the-art models.

Sl. No	Article	Author	Source	Year
3	Evaluating RNN Variants for Dysphonia classification using the uncommon voice dataset A comparative analysis	*Irum Sindhu, Mohd Shamrie,Sanin*	Journal Of Intelligent Computing Vol: 16 No: 3	2025

Abstract: Dysphonia, a voice disorder characterized by abnormal vocal quality, significantly impacts communication abilities. Accurate and early detection is crucial for effective treatment and intervention. This study compares the efficacy of various Recurrent Neural Network (RNN) variants in classifying dysphonia using the Uncommon Voice dataset and provides an evaluation of standard RNN, Gated Recurrent Unit (GRUs) and Long Short-Term Memory (LSTM) models. Each variant was trained and tested on the pre-processed dataset, split into 80:20 ratio of training and testing sets. The finding shows variations in model performance, were the standard RNN achieved an accuracy of 76%, while the LSTM and GRU models demonstrated superior accuracy of 94% and 93%, respectively. These results underscore the potential of advanced RNN variants, particularly LSTM and GRU, for dysphonia detection and classification. The analysis offers preliminary information n about the relative advantages and disadvantages of each RNN variant, paving the way for future research in the broader domain of speech sound disorder identification.

Sl. No	Article	Author	Source	Year
1	Analysis of ultrasonic pulse generated by piezoelectric material (LINBO3CUT Y-X)	*Hafdaoui Hichem, Benatia Djamel*	Journal Of Electronic Systems Vol: 15 No: 3	2025

Abstract: In this paper, we propose a new numerical method for ultrasonic pulse detection of an acoustics micro-waves signal during the propagation of acoustics microwaves generated by piezoelectric substrate LiNbO3 Cut Y-X in ultrasonic transducer. We have used the classifications by support vector machines (SVM), the originality of this method is it provides the accurate values and help us to identify undetectable waves that we cannot identify with the classical methods; in which we classify all the values of the real part and the imaginary part of the coefficient attenuation with the acoustic velocity in order to build a model from which we note the Ultrasonic Pulse or microwaves acoustics (bulk waves). By which we obtain accurate values for each of the coefficient attenuation and acoustic velocity. This study will be very interesting in modelling and realization of acoustics microwaves devices (ultrasound) based on the propagation of acoustics micro-waves.

Sl. No	Article	Author	Source	Year
2	A UNIX-Inspired Domain –Specific language for modular ABC Music Notation processing-	*Bruno M. Azevedo and Jose Joao Almeida*	Journal Of Electronic Systems Vol: 15 No: 3	2025

Abstract: This paper introduces abc:: dt, a domain-specific language (DSL) embedded in Perl, designed for creating modular and composable tools to process music written in the abc notation. Leveraging the UNIX philosophy of simple, text-stream-based tools, the authors reuse the parser from abcm2ps to handle real-world abc files. The system comprises three stages: parsing input into an internal representation (IR), transforming it using rule-based actuators, and generating output, which may serve as input for other tools. abc:: dt enables users to define specific transformations using concise rules, making tool creation more efficient. Several tools built with abc:: dt—like All-but-one, abc_paste, and abc_cat—demonstrate its capability to manipulate polyphonic scores, concatenate tunes, or isolate voices for rehearsal. The sequential structure used simplifies integration with scripting languages, while the DSL's extensibility supports advanced transformations. Overall, abc: :dt aims to establish a flexible "abc operating system:" to fill the gap in general purpose abc music processing tools.

Sl. No	Article	Author	Source	Year
3	Appling measurement-based probabilistic timing analysis to buffer resources	*Leonidas Kosmidis, Tullio Vardanega, Jaume, Eduardo*	Journal Of Electronic Systems Vol: 15 No: 3	2025

Abstract: The paper explores the application of measurement-based probabilistic timing analysis (MBPTA) TO buffer resources in critical real-time embedded systems (CRTES). It establishes that buffers, unlike jittery resources like caches, do not inherently create timing jitter; instead, they propagate existing jitter from other resources. Buffers manage contention by decoupling request sending and processing speeds, and their behavior is shown to be deterministic once probabilistic events are accounted for. The study demonstrates that MBPTA can analyse buffers effectively as long as dependencies remain consistent between analysis and operation. Empirical verification confirms that execution times are independent and identically distributed validating the suitability of mbpta. Additionally, a classification of hardware resources based on jitter sources is provided, enhancing the understanding of mbpta compliance in processor architectures.

Sl. No	Article	Author	Source	Year
1	Exploring ambiguity in contexte-free Grammars through randomized search.	*Naveneetha Vasudevan and Laurence Tartt*	International Journal of Computational Linguistics Research Vol: 16 No: 3	2025

Abstract: Context Free Grammars (CFGs) can be ambiguous, allowing inputs to be parsed in more than one way, something that is undesirable for uses such as programming languages. However, statically detecting ambiguity is undecidable. Though approximation techniques have had some success in uncovering ambiguity, they can struggle when the ambiguous subset of the grammar is large. In this paper, we describe a simple search-based technique which appears to have a better success rate in such cases.

Sl. No	Article	Author	Source	Year
2	A Proposal for finding combinations of key values from texts	*Rahul Patil, Prashant Ahire, Amol Dhumane, Saomya*	International Journal of Computational Linguistics Research Vol: 16 No: 3	2025

Abstract: To extract key value pairs from documents like resumes, we have to use various processing techniques to get relevant information. The extracted information encompasses a diverse range of factors, including education, experience, skills, interests, and employment history. By gathering such information and presenting it in a structured format, hiring managers can thoroughly understand and evaluate the backgrounds of applying candidates, thereby simplifying the entire recruitment process. This versatility allows organisations to leverage various techniques and technologies to extract valuable information from resumes, enabling them to streamline their hiring processes and make informed decisions about their workforce.

Sl. No	Article	Author	Source	Year
3	Revisiting Propp's morphology as a blueprint for generating Russian folk tales	*Pablo Gervas*	International Journal of Computational Linguistics Research Vol: 16 No: 3	2025

Abstract: This paper is not just an analytical tool, but as a potential blueprint for generating Russian folk tales. It argues that while propp's formalism has inspired many story generation systems its specific procedural aspects for generation have been largely overlooked or misapplied often leading to limitations. The authors propose a computational implementation focusing on Propp's core concepts: Character functions, their sequence and dependencies. They develop a system using plot drivers (function sequences) fabula generators functions with actions linked by preconditions/postconditions and flows (final story representation). Education focuses on structural adherence and continuity, demonstrating that methods employing unification and accommodation yield more cohesive narratives. The paper concludes that a declarative, modular approach based closely on Propp's original procedural description is viable for generating structurally sound tales within the specific domain of Russian folklore, offering potential for adaptation to other narrative structures.

Sl. No	Article	Author	Source	Year
1	A Federated Framework of multi-processor scheduling for real-time tasks	*Kunal Agrawal Sanjoy Baruah*	Electronics Devices Vol: 14 No: 2	2025

Abstract: Within the federated framework of multiprocessor scheduling a dedicated set of processors is assigned to each real-time task for its sole purpose. When tasks are described in an overly cautious manner (which is common in safety –critical environments), the majority of task invocations will probably exhibit computational demands significantly lower than the worst—case scenario, indicating that they could have been effectively scheduled on far fewer processors than those allocated based on the worst-case runtime prediction. If we could reliably determine during execution when all processors are necessary, the surplus processors could be put into a low energy "sleep" state when not in use or repurposed for handling non-real time tasks in the background. In this paper we introduce a model for depicting parallelizable real-time tasks in a way that allows us to achieve this. our model does not necessitate detailed insight into the internal workings of the code represented by the task; instead, it defines each task using a handful of prameters acquired through multiple executions of the code under varying conditions, while recording the run-times.

Sl. No	Article	Author	Source	Year
2	A Methodology for generating représentative benchmarks for machine learning –Driven code optimization	*Maksim Berëzovo, `Corinne Ancourt, justyna Maryna*	Electronics Devices Vol: 14 No: 2	2025

Abstract: The paper introduces COLA-Gen, a methodology for generating representative benchmarks to evaluate source-to-source code transformations using machine learning It addresses the scarcity of training data in code optimization by proposing a synthetic code generator that creates C kernels based on high-level specifications like array sizes, data dependencies, and loop structures via a domain – specific language .The system supports active learning to select the most informative samples, improving ML model efficiency with less labelling effort . The generated code mimics benchmark styles, such as poly bench, and is used to predict optimal loop tiling parameters. Evaluations show that active learning outperforms passive learning. Achieving up to 71 % of the speedup obtained by the LOCUS autotune and improving average speed up by 11%. The approach accelerates MLZ-driven optimization while minimizing bias and time costs with potential extension to other languages and transformations.

Sl. No	Article	Author	Source	Year
3	Multithreaded FPGA Accélérations via dataflow modeling with token tagging	*Francesco Ratto, Stefano Esposito, Carlo Sau, Luigi Raffo*	Electronics Devices Vol: 14 No: 2	2025

Abstract: The paper presents a novel model-based approach for designing multithreaded hardware accelerators on FPGAs using a dataflow paradigm. To address performance bottlenecks caused by single –threaded accelerators and resource in efficiency of replicated accelerators, the authors propose a single accelerator that supports multiple concurrent threads through token tagging in a dataflow model. Each token is labelled with a thread identifier, enabling shared combinational logic while maintaining separate state for each thread. The design includes multithreaded FIFOS-implemented via separated –memory or address-memory architectures-and actors that process tagged tokens, ensuring correct execution and preventing deadlocks with out-of-order FIFO access. The approach is validated using a video coding use case involving HEVC fractional pixel interpolation, implemented in two versions (Baseline and Matrix) and evaluated across single-threaded, multithreaded (Tagged2, Tagged4) and replicated (parallel2 Parallel 4() configurations on a XilinxArtix-7 FPGA. Results show that the multithreaded design achieves significant performance improvements in waiting response and elaboration times with limited resource overhead, effectively balancing performance and resource utilization. The work demonstrates the feasibility of dataflow-based multithreading for FPGA accelerators with future goals including OS integration design automation and enhanced priority management.

Sl. No	Article	Author	Source	Year
1	Algorithm based approach for precise sports training data extraction without intervention	*Bowen Xiao, Wei Xiao*	Journal Of E-Technology Vol: 16 No: 4	2025

Abstract: This paper explores a Sports movement trajectory data capturing technique based on the mean shift algorithm to overcome the challenges of collecting information in complex environmental conditions and high-speed movements. The method constructs a framework with 51 degrees of freedom and 16 joints to collect and analyze trajectory information during training and performs corresponding dimensionality reduction for better results. To reduce the dependency of the mean shift algorithm on environmental parameters, the probability density function in the gradient iteration estimation algorithm is chosen, and the color information of the target is used as a feature for trajectory data capturing. Experimental results demonstrate that this method effectively captures the joint activities of athletes, making Sports movement training trajectory data more accurate without any external parameter intervention.

Sl. No	Article	Author	Source	Year
2	A Language Assessment system using Deep Neural Networks and Facial expression recognition	*Peng Chengcai, Cheng Piaoyun, Wei Xia, Huang Zhaowei*	Journal Of E-Technology Vol: 16 No: 4	2025

Abstract: Educational Quality assessment serves as a crucial instrument for enhancing teaching quality and bolstering teaching effectiveness. Conventional college English teaching evaluations are static assessments that fail to reflect student's performance throughout the teaching process accurately. Hence, this paper develops a college English teaching evaluation model founded on deep learning neural networks. It achieves emotion classification via facial recognition of students and integrates this with a standard distribution evaluation model to assess student's attitudes toward English teaching quality. The experimental outcomes reveal that the proposed model significantly enhances the accuracy of emotion recognition and classification rates, effectively mirroring student's attitudes towards English instruction in real world applications.

Sl. No	Article	Author	Source	Year
3	Multimodal music emotion classification via stacking-based fusion of audio and lyric features with transfer learning	*Xiaojuan Chen*	Journal Of E-Technology Vol: 16 No: 4	2025

Abstract: This paper proposes a novel multimodal music emotion classification algorithm that integrates audio and lyrical features to overcome the limitations of single modality approaches. Recognizing that music conveys emotion through both sound and text, the system employs deep learning techniques, specifically combining One D CNN and TwoD CNN models with C3D and I3D frameworks for audio processing, alongside text analysis using TF IDF and Word2vec. To effectively fuse these heterogeneous modalities, the study implements a stacking-based decision level fusion strategy with a Soft Max secondary classifier, significantly outperforming feature level and traditional decision fusion methods. Utilizing transfer learning on datasets like Sport-1M and Kinetics enhances model generalization, while Adam and SGD optimizers improve training efficiency. Experimental results on a dataset of 2000 songs (anger, happiness, relaxation, sadness) demonstrate that the proposed multimodal approach achieves a maximum classification accuracy of 78%, a 4% improvement over single modal classifiers and a 2% gain over other fusion techniques. The method effectively mitigates data heterogeneity and over fitting via 5-fold cross validation and addresses challenges in classifying â€œrelaxationâ€ by leveraging complementary audio lyric cues. Evaluation metrics (accuracy, F1-score, ROC/AUC) confirm superior performance, validating that synergistic integration of audio spectral features and semantic lyric representations yields more precise, robust, and scalable music emotion recognition, even with limited labeled data.