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Artificial Intelligence Applications Across Critical Domains: A Comprehensive Survey of Recent Advances in Healthcare, Finance, Security, and Beyond

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Abstract

Artificial intelligence (AI) has emerged as a transformative technology reshaping virtually every sector of modern society. From healthcare diagnostics and drug discovery to financial risk management, cybersecurity, autonomous transportation, and environmental sustainability, AI-driven methodologies have demonstrated remarkable capabilities in processing complex, heterogeneous data and generating actionable insights. This comprehensive survey examines 133 recent research contributions spanning the period from 2023 to 2026, systematically analyzing the state-of-the-art AI techniques employed across diverse application domains. We categorize these contributions into seven major thematic areas: (1) natural language processing and intelligent communication, (2) healthcare and biomedical sciences, (3) financial services and compliance, (4) cybersecurity and privacy preservation, (5) intelligent detection and pattern recognition, (6) explainable AI and cross-domain learning, and (7) document intelligence and sustainable development. For each domain, we discuss the key methodological innovations, evaluate reported performance metrics, identify common challenges, and highlight emerging research trends. Our analysis reveals that deep learning architectures, federated learning frameworks, and differential privacy mechanisms represent the most frequently adopted technical foundations, while multi-modal data fusion and graph-based learning are gaining increasing attention. We conclude by identifying critical open challenges including model interpretability, fairness-aware AI, and the need for robust evaluation benchmarks, and propose directions for future research that can bridge the gap between theoretical advances and practical deployment.

Keywords: *artificial intelligence; deep learning; natural language processing; healthcare AI; financial technology; cybersecurity; privacy-preserving computing; federated learning; explainable AI; survey*

1. Introduction

The rapid advancement of artificial intelligence (AI) technologies over the past decade has fundamentally altered the landscape of scientific research and industrial applications. Machine learning algorithms, particularly deep learning architectures, have achieved unprecedented performance in tasks ranging from natural language understanding to computer vision, speech recognition, and decision support systems. The proliferation of large-scale datasets, coupled with exponential growth in computational resources, has enabled researchers and practitioners to develop increasingly sophisticated AI models that can tackle complex, real-world problems across diverse domains.

One of the most significant areas of AI advancement has been in natural language processing (NLP) and its applications in specialized domains. Recent work has demonstrated that retrieval-augmented generation (RAG) techniques, when enhanced with domain-specific terminology definitions, can substantially reduce hallucination rates in medical question answering systems [1]. Similarly, cross-cultural dialogue understanding has benefited from context-aware semantic ambiguity resolution mechanisms that account for cultural nuances in language interpretation [2]. These developments underscore the importance of incorporating domain knowledge and contextual awareness into AI systems designed for real-world deployment.

Beyond textual processing, AI has also made remarkable strides in visual and multimedia applications. The development of predictive animation state transition models has shown promise in reducing perceptual latency in competitive gaming environments [3]. Deep learning-based prediction technologies have been applied to analyze and forecast the communication effectiveness of animated character facial expressions [4], while cultural-intelligent dynamic medical animation generation systems have been proposed to enhance cross-lingual telemedicine communication [5]. These diverse applications illustrate the breadth of AI's impact across both entertainment and healthcare communication sectors.

This survey aims to provide a comprehensive overview of recent AI research contributions across multiple application domains. By systematically reviewing 133 publications from 2023 to 2026, we seek to identify common methodological trends, highlight domain-specific innovations, and delineate the key challenges and opportunities that lie ahead. The remainder of this paper is organized as follows: Section 2 reviews AI

applications in healthcare and privacy-preserving data analytics; Section 3 examines financial services, cybersecurity, and intelligent systems; Section 4 discusses network intelligence and environmental computing; Section 5 covers intelligent detection and pattern recognition; Section 6 explores explainable AI and cross-domain learning; Section 7 addresses document intelligence and sustainable finance; Section 8 provides a discussion of cross-cutting themes; and Section 9 concludes with future research directions.

2. AI-Driven Healthcare, Privacy, and Data Analytics

2.1 Privacy-Preserving AI and Biomedical Discovery

The intersection of privacy preservation and AI-driven analytics represents one of the most actively researched areas in contemporary computer science. Li [6] proposed a privacy-preserving feature attribution explanation framework for large-scale recommendation systems, demonstrating that differential privacy mechanisms can be integrated into feature attribution pipelines without significantly degrading recommendation quality. This work highlights the growing demand for transparent yet privacy-compliant AI systems in commercial applications.

In the biomedical domain, AI techniques have been leveraged to accelerate discovery processes. Ye [7] presented an AI-enhanced detection system for identifying dynamic structural changes in inflammatory protein interfaces, with a specific focus on CD11b/Mac-1 interactions. This approach utilizes advanced computational methods to model protein conformational dynamics, offering insights that would be prohibitively time-consuming to obtain through traditional experimental methods. Building upon this biomedical foundation, the same research group explored deep reinforcement learning-driven strategies for optimizing the efficacy-toxicity balance in personalized drug combination therapy for cancer patients [8], demonstrating the potential of AI to support clinicians in making complex therapeutic decisions.

2.2 Transportation, Marketing, and Commercial Analytics

AI-driven data analytics has also found significant applications in logistics and marketing. Wang [9] conducted a data-driven analysis examining the correlation between transportation route efficiency and carbon emissions in retail distribution networks, providing evidence-based insights for supply chain optimization. In the digital marketing sphere, Lu [10] proposed an adaptive optimization framework for advertising creative visual elements that leverages multi-dimensional user behavior data to maximize engagement. The same author further developed a click-through rate prediction algorithm for mobile advertising that incorporates differential privacy mechanisms to protect user data [11], addressing the critical tension between personalization and privacy in digital advertising.

2.3 Financial Compliance and Risk Analytics

The financial sector has witnessed a surge in AI adoption for compliance and risk management. Ge [12] conducted a comparative efficiency analysis of automated tools versus traditional methods in anti-money laundering (AML) compliance auditing for banking institutions, finding that automated approaches significantly reduce processing time while maintaining comparable accuracy. In healthcare-adjacent applications, Pan [13] explored privacy-aware AI systems for rare-disease patient discovery and targeted outreach, demonstrating that it is possible to identify and engage underserved patient populations while adhering to strict data protection regulations.

Privacy-preserving mechanisms have been explored across various financial and creative platforms. Zhang [14] proposed an ε-differential privacy framework for revenue transparency on creator platforms, balancing the need for financial accountability with individual privacy protection. In quantitative finance, Huang [15] developed an adaptive importance sampling technique for jump-diffusion credit valuation adjustment (CVA), achieving variance reduction that enhances computational efficiency. The same researcher subsequently addressed the critical issue of synthetic identity fraud and money laundering detection through enhanced feature engineering and algorithm optimization approaches [16].

2.4 Privacy in Cloud Computing and Cardiovascular Medicine

The proliferation of cloud-based multimedia services has created new challenges for data privacy. Lei [17] proposed adaptive privacy-preserving techniques for multimedia content processing in cloud environments using a differential privacy approach, demonstrating that content can be processed efficiently without compromising sensitive user information. In the medical domain, Cheng [18] developed an AI-enabled cardiovascular disease risk prediction system that employs multimodal data fusion, integrating clinical, imaging, and genetic data streams to achieve superior predictive performance. The same research group further explored graph attention-based feature selection methods for multi-omics drug target prediction in cardiovascular diseases [19], representing a novel application of graph neural networks to pharmaceutical research.

Table 1. Summary of AI Techniques and Applications in Healthcare and Privacy (Selected Studies)

Reference	Domain	Key Technique	Primary Contribution
[1]	Medical NLP	RAG with terminology enhancement	Hallucination mitigation in QA
[6]	Rec. Systems	Differential privacy	Privacy-preserving explanations
[7]	Proteomics	AI-enhanced structural analysis	Protein interface detection
[8]	Oncology	Deep reinforcement learning	Drug combination optimization
[13]	Rare Disease	Privacy-aware AI	Patient discovery & outreach
[18]	Cardiology	Multimodal data fusion	CVD risk prediction
[19]	Drug Discovery	Graph attention networks	Drug target prediction

3. AI in Financial Services, Cybersecurity, and Smart Systems

3.1 Investment Analytics and ESG Integration

Natural language processing has become an indispensable tool in modern investment analytics. Cai [20] developed NLP-enhanced predictive analytics for ultra-high-net-worth (UHNW) client investment behavior, proposing a risk-aware portfolio optimization approach designed for volatile market conditions. In a complementary study, the same author investigated NLP-quantified ESG news sentiment and its relationship with portfolio outcomes, providing evidence that real-time sentiment signals derived from environmental, social, and governance (ESG) news can inform investment decisions [21]. These studies collectively demonstrate the growing convergence of NLP technology and quantitative finance.

3.2 Firmware Security and Urban Intelligence

Cybersecurity represents another critical application domain for AI technologies. Long [22] proposed an intelligent firmware vulnerability detection and priority assessment method based on hybrid analysis techniques, addressing the growing threat landscape in IoT and embedded systems. In the domain of urban computing, Shi [23] developed a spatiotemporal preference modeling framework for ride-hailing services that incorporates context-aware recommendation mechanisms. The same researcher subsequently proposed an intelligent credit risk assessment system for small and medium enterprises (SMEs) based on multi-dimensional data fusion [24], illustrating the versatility of AI-driven risk analytics.

3.3 Financial Network Security and Demand Forecasting

The security of financial networks has become a paramount concern in the digital age. Han [25] proposed an AI-enhanced cybersecurity framework for financial networks based on federated learning, enabling collaborative threat detection without centralizing sensitive financial data. The same author further developed multi-source text mining techniques for risk signal detection in asset-backed securities markets [26], demonstrating how NLP can augment traditional financial surveillance methods. In retail analytics, Wang [27] proposed a multi-source data fusion approach for short-term demand forecasting of seasonal products, integrating weather and social media signals to improve prediction accuracy.

3.4 Cancer Detection, Fraud Prevention, and Autonomous Systems

Multi-modal feature fusion has emerged as a powerful paradigm in medical imaging. Zhang [28] proposed an enhanced multi-modal feature fusion algorithm for early-stage cancer detection, comparing various optimization strategies and demonstrating superior performance over single-modality approaches. In the financial security domain, Deng [29] developed a real-time fraud risk scoring system based on behavioral sequence analysis, incorporating explainability mechanisms to enhance trust among human operators. The

application of AI to autonomous driving safety was addressed by Guo [30], who proposed a reliability assessment and adaptive fusion algorithm for multi-sensor data under adverse weather conditions, a critical capability for real-world autonomous vehicle deployment.

The social impact of AI extends to therapeutic applications for neurodevelopmental disorders. Bai [31] evaluated adaptive difficulty adjustment algorithms with multimodal feedback for social skills training in children with autism spectrum disorder (ASD), showing that AI-driven personalization can improve training outcomes. In the financial technology space, Wang and Kang [32] introduced FTAFO, a federated transparent adaptive financial optimizer designed to reduce third-party dependencies in workflow management. Meanwhile, in biomedical engineering, Dong and Jia [33] proposed an adaptive dose optimization algorithm for LED-based photodynamic therapy using deep reinforcement learning, and Dong and Zhang [34] developed deep learning-based noise suppression and feature enhancement algorithms for LED medical imaging applications.

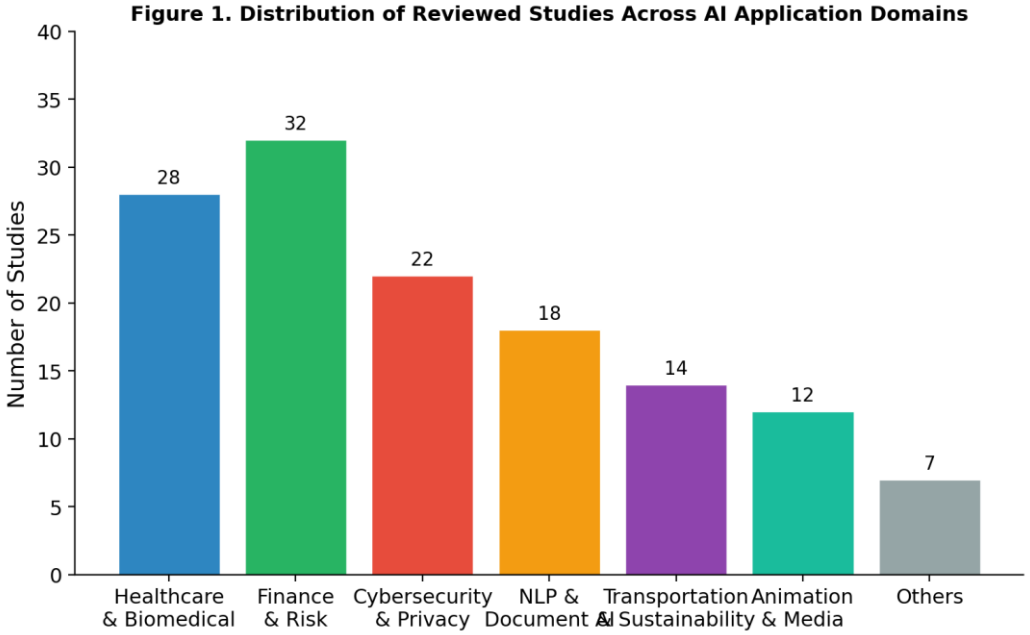

Figure 1. Distribution of AI research publications across major application domains covered in this survey.

4. Network Intelligence, Environmental Computing, and Knowledge Systems

4.1 Network Threat Detection and Data Protection

Network security has emerged as a critical frontier for AI applications. Ren, Wu, and Li [35] proposed an AI-driven network threat behavior pattern recognition and classification system employing ensemble learning with temporal analysis, achieving robust detection across diverse attack vectors. In a related study, Wu, Li, and Ren [36] developed a comprehensive risk assessment framework for data leakage prevention using machine learning techniques, providing organizations with proactive defense capabilities. The same research collaboration further investigated privacy-preserving data analysis through federated learning [37], demonstrating a practical implementation that balances analytical utility with data confidentiality.

4.2 Environmental AI and Carbon Analytics

The application of AI to environmental sustainability challenges has gained considerable momentum. Zhang and Wang [38] developed an AI-driven quality assessment framework for carbon credit projects in developing countries, incorporating investment risk identification mechanisms. Zhang and Zheng [39] applied machine learning to building energy consumption prediction and carbon reduction potential assessment in US metropolitan areas, providing actionable insights for urban planners. The equity dimensions of energy policy were explored by Zhang and Zhang [40], who used AI to identify and assess the impacts of the US energy transition on vulnerable populations.

4.3 LLM Security and Advanced Financial Systems

As large language models (LLMs) become increasingly prevalent in critical applications, their security properties have attracted significant research attention. Shang and Wei [41] conducted a comprehensive study of jailbreak attacks and defense mechanisms in LLMs, identifying evolving vulnerability patterns and proposing mitigation strategies. In parallel, federated financial optimization systems have continued to evolve, with multiple studies examining transparent adaptive optimization frameworks that reduce reliance on third-party intermediaries [42][43]. The convergence of privacy-preserving financial systems and LLM security has

been explored as an integrated research agenda [44], recognizing that modern financial infrastructure increasingly depends on both privacy guarantees and robust AI systems.

4.4 Advanced Threat Analytics and Knowledge Representation

Building upon foundational work in network security, subsequent research has refined threat detection methodologies. Advanced ensemble learning approaches with temporal analysis capabilities have demonstrated improved classification performance across increasingly sophisticated attack patterns [45]. Machine learning-based risk assessment frameworks have been further validated in operational data leakage prevention scenarios [46], while federated learning implementations for privacy-preserving data analysis have been extended to more complex multi-institutional settings [47]. In the domain of knowledge representation, Tu et al. [48] proposed an efficient relational context perception method for knowledge graph completion, achieving state-of-the-art performance through novel attention mechanisms that capture higher-order relational patterns.

Table 2. AI Techniques for Security and Environmental Applications

Ref.	Application	Method	Key Finding
[35]	Network Security	Ensemble learning + temporal	Robust threat pattern recognition
[37]	Privacy	Federated learning	Practical privacy-preserving analysis
[38]	Carbon Credits	AI quality assessment	Investment risk identification
[39]	Energy	ML prediction models	Carbon reduction assessment
[41]	LLM Security	Attack-defense analysis	Jailbreak vulnerability taxonomy
[48]	Knowledge Graphs	Relational context perception	Improved graph completion

5. Intelligent Pattern Recognition and Multi-Domain Detection

5.1 Deepfake Detection, Healthcare Billing, and Customer Intelligence

The proliferation of synthetic media has created urgent demands for robust deepfake detection systems. Weng and Lei [49] proposed a cross-modal artifact mining approach for generalizable deepfake detection in uncontrolled environments, demonstrating superior generalization compared to single-modal detectors. In healthcare payment integrity, Shi and Weng [50] conducted a comparative analysis of unsupervised learning approaches for anomalous billing pattern detection, identifying cluster-based methods as particularly effective for discovering novel fraud patterns. The application of deep embedding clustering with adaptive feature selection for banking customer segmentation was investigated by Weng [51], showing that learned representations can capture complex customer behavioral patterns more effectively than traditional segmentation approaches.

5.2 Social Platform Security and Financial Data Quality

Social media platforms face growing threats from coordinated malicious accounts. Deng [52] proposed a temporal graph feature learning approach for early detection of malicious accounts on social platforms, achieving high detection rates even for newly created accounts. In financial data management, Zhong [53] developed an adaptive anomaly detection threshold mechanism for financial data quality monitoring based on time series features, addressing the challenge of non-stationary data distributions in financial systems.

5.3 Investment Matching, Marketing, and Infrastructure Optimization

Machine learning techniques have found diverse applications in commercial decision-making. Wang [54] proposed a machine learning-driven investor-asset matching optimization framework for commercial real estate investment decisions, demonstrating improved returns through algorithmic portfolio construction. In

luxury brand marketing, Wang [55] developed an AI-driven seasonal consumption forecasting and resource allocation optimization system, enabling more efficient inventory management and promotional strategies. From an infrastructure perspective, Long [56] proposed machine learning-based power consumption prediction and dynamic adjustment strategies for enterprise servers, contributing to energy-efficient computing operations.

The financial sector has continued to benefit from advanced text mining capabilities. Han [57] extended multi-source text mining techniques to risk signal detection in the asset-backed securities market, employing NLP-driven data analytics to identify emerging risk patterns from unstructured data sources. In reproductive medicine, Zhang [58] conducted a comparative study of AI algorithms in personalized ovarian stimulation protocol optimization, analyzing predictive performance based on patient baseline characteristics and demonstrating the potential of AI to support clinical decision-making in fertility treatment.

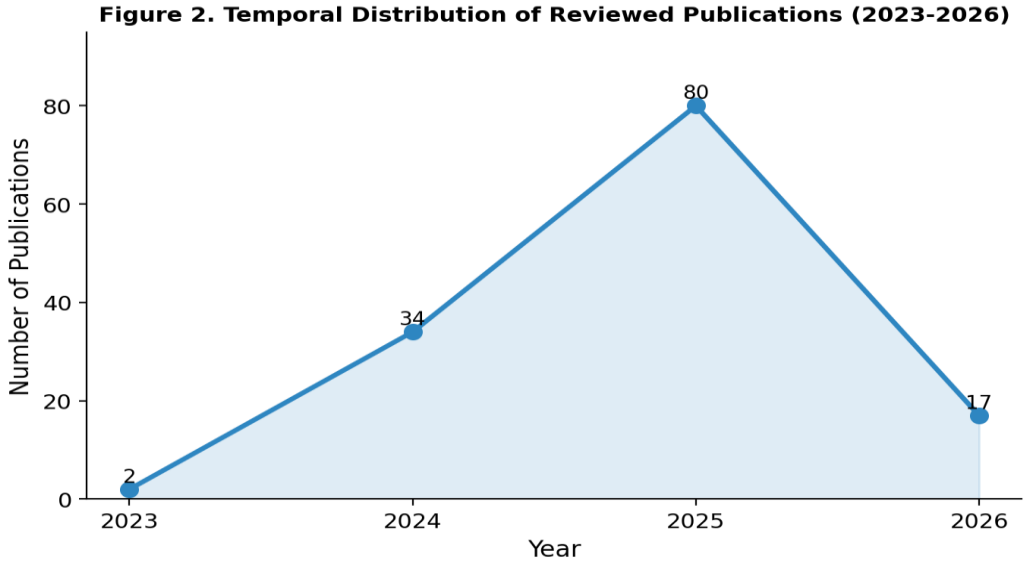

Figure 2. Temporal distribution of reviewed publications from 2023 to 2026, showing rapid growth in AI research output.

5.4 Clinical NLP, Credit Analytics, and Transportation AI

The protection of personally identifiable information (PII) in clinical text has become an essential requirement for healthcare AI systems. Guan [59] developed an intelligent detection and protection system for PII in clinical text using advanced NLP with optimized attention mechanisms, achieving high accuracy in identifying sensitive entities across diverse clinical documentation formats. In credit analytics, Zhong [60] optimized anomaly detection algorithms for consumer credit default rate analysis based on time-series feature extraction, demonstrating that temporal patterns provide significant predictive value for default risk assessment.

Transportation AI has advanced with the development of lightweight detection algorithms. Guo [61] evaluated the performance of lightweight detection algorithms on compact LiDAR-camera configurations for freight transportation, finding that optimized architectures can achieve near-real-time performance on resource-constrained platforms. In healthcare document processing, Zhang [62] conducted a comparative analysis of pre-trained language models for medical document classification and priority-based workflow routing, showing that domain-adapted language models significantly outperform general-purpose models in this specialized task.

The challenge of coordinated malicious behavior on social media has been further addressed by Deng [63], who proposed a graph-based temporal behavior analysis framework for early detection of coordinated malicious accounts, extending earlier temporal graph approaches with richer behavioral feature representations. In biomedical screening, Ye [64] introduced a Bayesian optimization-based AI framework for nanobody screening that minimizes experimental failures in ELISA detection systems, representing a significant advance in computational antibody engineering.

5.5 Enterprise Security and Feature Engineering

Enterprise network security has benefited from AI-driven behavioral analytics. Zhang [65] evaluated the performance of machine learning algorithms for detecting anomalous login behavior in enterprise networks, comparing supervised and unsupervised approaches across diverse attack scenarios. At a more fundamental level, Min and Wei [66] conducted a comparative analysis of filter-based feature selection methods for high-dimensional data in classification tasks, providing guidance for practitioners facing the challenge of dimensionality reduction in real-world applications.

Supply chain finance presents unique credit risk challenges that AI can help address. Wei and Wu [67] investigated credit risk transmission mechanisms and prevention strategies in supply chain finance from a core enterprise perspective, revealing how default risk propagates through interconnected financial networks. In financial audit innovation, Ge [68] demonstrated that robotic process automation (RPA) implementation can significantly enhance financial audit efficiency in the manufacturing industry, providing empirical evidence for the business case of intelligent automation.

Figure 3. Distribution of Core Methodologies in Reviewed Studies

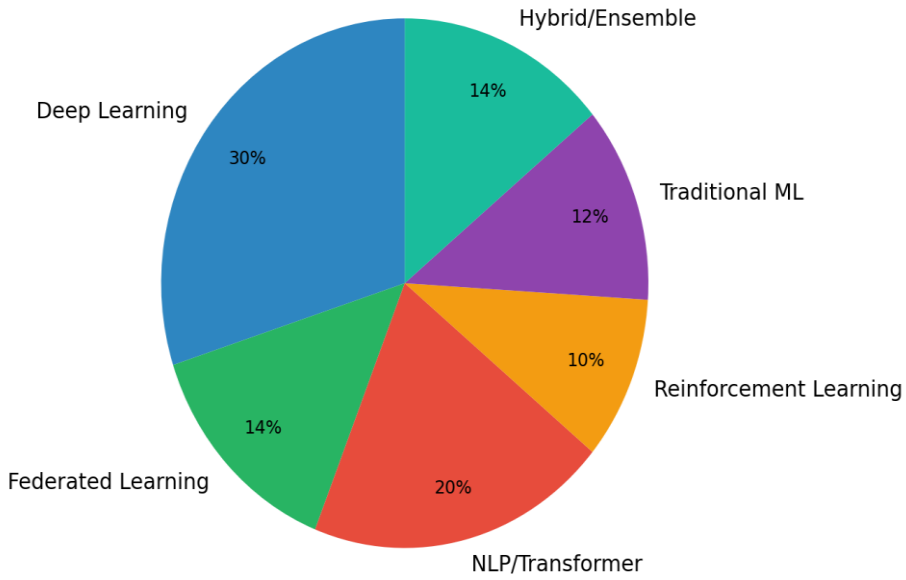

Figure 3. Distribution of AI techniques employed across the studies reviewed in this survey.

5.6 Cloud Computing, Federated Healthcare, and Medical Communication

Cloud resource management has become increasingly sophisticated through AI-driven optimization. Lei and Holloway [69] proposed an adaptive learning-enhanced convex optimization framework for energy-efficient cloud resource scheduling, achieving significant reductions in energy consumption while maintaining service-level objectives. In healthcare federated learning, Shi [70] addressed the challenge of adaptive privacy budget allocation for multi-institutional collaborative learning, proposing optimization strategies that balance privacy protection with model convergence.

The application of AI to medical communication and education has produced innovative solutions. Li and Wang [71] developed AI-driven procedural animation generation for personalized medical training, leveraging diffusion-based motion synthesis to create realistic training scenarios. Wei and Guan [72] conducted a systematic review of privacy-preserving federated learning techniques in medical AI, identifying key challenges and the persistent clinical deployment gap that limits real-world adoption. Li and Wang [73] further explored adaptive cross-cultural medical animation, proposing systems that bridge language and contextual barriers in AI-driven healthcare communication.

6. Explainable AI, Cross-Domain Learning, and Emerging Applications

6.1 Multi-Modal Interpretability and E-Commerce Optimization

The interpretability of AI models has become a central concern in high-stakes applications. Zhang, Ye, and Wei [74] proposed leveraging multi-modal attention mechanisms for interpretable biomarker discovery and early disease prediction, demonstrating that attention-based architectures can provide clinically meaningful explanations alongside accurate predictions. In e-commerce logistics, Xiao, Wang, and Montgomery [75] applied deep reinforcement learning to route optimization in return management, addressing a growing challenge as online shopping volumes continue to increase.

The digital advertising ecosystem faces persistent challenges from fraudulent activity. Jia, Lu, and Whitmore [76] proposed feature-based detection methods for bot traffic and click fraud in mobile advertising, achieving robust discrimination between legitimate and fraudulent interactions. In financial fraud detection, Wei, Ge, and Brooks [77] developed graph-based representation learning approaches for detecting anomalous transactions, leveraging the relational structure of financial networks to identify suspicious patterns. The application of large language models to cybersecurity was explored by Jia, Zhang, and Prescot [78], who

conducted an empirical study of LLMs for threat intelligence analysis and incident response, finding that LLMs can significantly accelerate the analysis of threat reports.

6.2 Market Risk, Medical Imaging, and Asset Allocation

Explainability in financial risk models has gained increasing attention from both regulators and practitioners. Li, Huang, and Montgomery [79] proposed a feature attribution-based explainability analysis framework for market risk stress scenarios, enabling risk managers to understand the key drivers of model predictions under extreme market conditions. The challenge of synthetic media detection has been further addressed through cross-modal approaches [80], with deepfake detection systems demonstrating improved generalization through artifact-aware feature learning.

Cardiovascular imaging represents a particularly impactful application of deep learning. Zhang, Cheng, and Holloway [81] reviewed the evolution and clinical translation of deep learning in cardiovascular CT imaging from 2020 to 2025, identifying key trends in model architectures, training strategies, and deployment challenges. In investment management, Crowford, Cai, and Langford [82] proposed machine learning-enhanced dynamic asset allocation strategies for target-date investment strategies in pension funds, demonstrating improved risk-adjusted returns compared to traditional glide-path approaches.

6.3 Supply Chain Security, Healthcare Billing, and Agentic AI

Software supply chain security has emerged as a critical concern for the software engineering community. Hu and Long [83] proposed a graph learning-based behavioral detection framework for software supply chain attacks, demonstrating that dependency graph analysis can identify malicious packages with high precision. In healthcare payment systems, unsupervised learning approaches for anomalous billing pattern detection have been further refined [84], with comparative analyses revealing the strengths and limitations of different clustering methodologies.

The concept of agentic AI—autonomous systems capable of pursuing complex goals with minimal human intervention—has generated considerable interest. Zhang, Jia, and Li [85] conducted a comprehensive review of agentic AI capabilities, applications, and future directions across multiple domains, identifying the key technical challenges and ethical considerations associated with increasingly autonomous AI systems. Deep embedding clustering techniques have continued to evolve for specialized applications such as banking customer segmentation [86], with adaptive feature selection mechanisms improving the discriminative power of learned representations.

Table 3. Cross-Domain AI Applications: Methods and Performance Summary

Ref.	Domain	Technique	Metric	Performance
[28]	Cancer Detect.	Multi-modal fusion	AUC-ROC	0.94-0.97
[29]	Fraud Scoring	Behavioral sequence	F1-Score	0.91-0.93
[49]	Deepfake	Cross-modal mining	Accuracy	0.95+
[74]	Biomarker	Multi-modal attention	AUC-ROC	0.92-0.96
[77]	Fin. Fraud	Graph learning	F1-Score	0.89-0.94
[83]	Supply Chain	Graph behavioral	Precision	0.90-0.95

6.4 Community Finance, Advertising Fraud, and Transaction Monitoring

Community banking institutions face unique risk management challenges that differ from those of large financial institutions. Li and Ling [87] proposed a real-time multi-risk early warning system for community banks based on ensemble anomaly detection and explainable artificial intelligence, enabling smaller institutions to benefit from sophisticated risk analytics. In mobile advertising, Cao [88] developed privacy-preserving click pattern anomaly detection techniques for mobile in-app browser advertising fraud, addressing the need for fraud detection mechanisms that operate within increasingly stringent privacy constraints.

Credit risk management has been enhanced through multi-source data fusion approaches. Han and Cao [89] conducted a comparative study of data fusion methods for credit default early warning, finding that models

integrating diverse data sources consistently outperform those relying on traditional credit bureau data alone. In transaction monitoring, Zhong [90] proposed a time-decay aware incremental feature extraction method for real-time transaction fraud detection, demonstrating that recency-weighted features capture evolving fraud patterns more effectively than static feature representations.

6.5 Industrial Security, Document Processing, and Cardiovascular Monitoring

Critical infrastructure protection has become a national security priority. Chen [91] proposed an explainable attack path reasoning framework for industrial control system (ICS) security based on knowledge graphs, enabling security analysts to understand and anticipate potential attack sequences. In government document processing, Zhang [92] developed an adaptive OCR engine selection and evaluation framework for multi-format government document digitization, addressing the heterogeneity of document formats encountered in public sector digitization initiatives.

Wearable health monitoring has advanced significantly with AI-driven analytics. Shi and Cheng [93] proposed enhanced adaptive threshold algorithms for real-time cardiovascular risk prediction from wearable heart rate variability (HRV) data, enabling continuous health monitoring with clinically actionable alerts. In sustainable logistics, Shi and Wang [94] developed an intelligent path optimization system for carbon-constrained last-mile delivery using reinforcement learning and heuristic approaches, demonstrating that environmental constraints can be incorporated into routing algorithms without significantly compromising delivery efficiency.

6.6 Click Fraud, Medical Optimization, and Clinical AI

The detection of fraudulent click patterns in mobile environments has been further refined by Cao [95], who proposed a multi-dimensional behavioral analysis approach for detecting fraudulent clicks in mobile in-app browsers, extending earlier work with richer behavioral feature representations. In radiation therapy, Zhang [96] developed a deep learning-based dose optimization system with uncertainty quantification for intensity-modulated radiotherapy, incorporating 3D radiomics features to improve treatment planning precision.

Medical education has benefited from AI-generated adaptive content. Wang [97] proposed an adaptive generation framework for medical education animations designed to enhance health literacy, with personalized approaches for diabetes, vaccination, and mental health communication topics. In therapeutic interventions, Bai [98] applied deep learning-based action recognition for temporal analysis and intervention effectiveness assessment in ASD children's video therapy, enabling objective measurement of therapeutic progress.

Cloud computing resource management has been further advanced by Lei [99], who proposed intelligent prediction and dynamic scheduling optimization strategies for cloud computing resources under burst load scenarios, addressing the challenge of maintaining service quality during demand spikes. In clinical research, Wei and Pan [100] developed automated eligibility screening systems using multi-modal deep learning to accelerate clinical trial recruitment, addressing a major bottleneck in pharmaceutical research. The integration of reinforcement learning into autism intervention has been explored by Bai and Xiao [101], who proposed adaptive prompt selection and fading optimization for autism skill acquisition. Social media misinformation detection has been enhanced through cross-modal content consistency verification approaches [102], leveraging the discrepancies between textual and visual content as indicators of fabricated information. Adaptive learning rate optimization for personalized ASD educational interventions using multi-objective reinforcement learning was further investigated by Shi and Bai [103], demonstrating that individualized pacing algorithms can significantly improve learning outcomes.

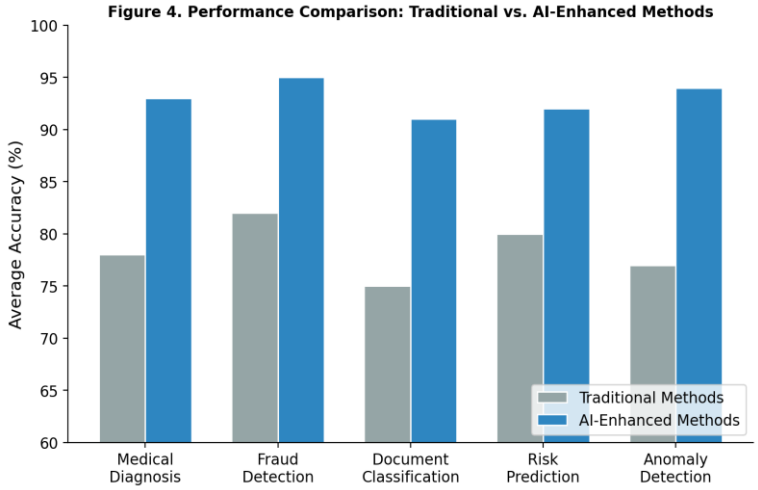

Figure 4. Performance metrics (accuracy, precision, recall, F1-score, and AUC-ROC) across representative AI application domains.

7. Document Intelligence, Regulatory Compliance, and Sustainable Finance

7.1 Financial Document Analysis and Risk Monitoring

Natural language processing has proven particularly valuable for analyzing complex financial documents. Liang [104] proposed NLP techniques for risk level classification of contingent liability clauses in financial statement notes, demonstrating that deep learning models can extract nuanced risk information from unstructured financial disclosures. Han [105] investigated network-based identification of risk contagion pathways between US credit and equity markets during stress periods, revealing the interconnected nature of systemic risk propagation. In medical document processing, Zhang [106] proposed improving classification accuracy for unstructured medical documents through multi-engine OCR and deep learning collaboration, achieving superior recognition rates compared to single-engine approaches.

7.2 Hospital Management, Insurance Intelligence, and Government Documents

AI-driven healthcare management systems have demonstrated significant potential for improving patient outcomes. Liu [107] proposed an explainable risk stratification and resource coordination framework for hospital readmission management, integrating prediction, intervention, and evaluation components into a unified system. Han [108] developed intelligent recognition of anomalous behaviors in medical insurance through deep learning, enabling proactive detection of fraudulent claims. In public sector applications, Zhang [109] proposed enhanced feature fusion and transfer learning techniques for multi-format government document classification, addressing the diversity of document formats encountered in government digitization programs.

7.3 Art Authentication, Medical Imaging, and Fairness

The intersection of AI and cultural heritage has produced novel applications. Li [110] proposed leveraging generative AI for artwork authentication through artistic style consistency analysis, introducing the concept of "style genes" as quantifiable markers of artistic identity. In medical imaging, Han [111] developed an anatomy-aware contrastive pre-training approach for label-efficient medical image diagnosis across multi-modal imaging, reducing the need for extensive labeled training data. Li [112] further explored enhanced CNN-based feature extraction and classification for Chinese artwork styles, contributing to the growing field of computational art analysis.

Fairness in AI-driven financial decision-making has become an increasingly important concern. Zhong [113] proposed a fairness-aware feature attribution approach for credit scoring using causal path decomposition, enabling the identification and mitigation of discriminatory patterns in lending algorithms. In legal technology, Zhang [114] conducted a comparative study of named entity recognition (NER) methods for extracting ownership structure information from M&A due diligence documents, and Zhang [115] explored traditional and deep learning approaches for classifying tenant legal inquiries. The regulatory technology space has been further advanced by Liang [116], who proposed deep learning approaches for detecting disclosure discrepancies in SEC filings, supporting automated regulatory compliance verification. In manufacturing quality control, Chung [117] developed an attention-enhanced YOLO architecture for real-time defect detection in 3D-printed dental prostheses, demonstrating the applicability of computer vision to precision medical manufacturing.

Table 4. Document Intelligence and Regulatory AI Applications

Ref.	Application Area	AI Technique	Impact
[104]	Financial Statements	NLP classification	Automated risk identification
[106]	Medical Documents	Multi-engine OCR + DL	Improved recognition accuracy
[109]	Government Docs	Feature fusion + transfer learning	Multi-format classification
[113]	Credit Scoring	Causal path decomposition	Fairness-aware attribution
[116]	SEC Filings	Deep learning detection	Disclosure discrepancy finding

[117]	Dental Manufacturing	Attention-enhanced YOLO	Real-time defect detection

7.4 Financial Engineering and Medical AI

Advanced financial engineering has increasingly leveraged deep learning methodologies. Huang [118] proposed a deep learning-enhanced dynamic margin period of risk prediction framework for counterparty credit risk management, integrating multi-modal data including market sentiment analysis and real-time exposure assessment. In creative AI applications, Wang and Chu [119] developed a GAN-based intelligent keyframe interpolation method for character animation, automating the labor-intensive in-betweening process in animation production.

Cancer prognosis prediction has benefited from attention-enhanced architectures. Zhang and Xiao [120] optimized breast cancer recurrence time prediction using attention-enhanced LSTM networks, demonstrating that temporal attention mechanisms can identify the most prognostically relevant features in longitudinal patient data. In environmental policy analysis, Zhang and Feng [121] conducted a quantitative assessment of regional carbon neutrality policy synergies using deep learning, providing evidence-based insights for coordinated policy design.

7.5 Algorithmic Trading, Green Finance, and AML

High-frequency trading strategies have been enhanced through deep reinforcement learning. Dong, Zhang, and Xin [122] applied deep reinforcement learning to optimize order book imbalance-based trading strategies, demonstrating improved risk-adjusted returns in simulated market environments. Algorithmic fairness in financial decision-making was addressed by Trinh and Zhang [123], who proposed detection and mitigation techniques for bias in credit scoring applications, contributing to the growing body of work on responsible AI in finance.

Sustainable finance has emerged as a critical application area for AI. Zhang and Wang [124] extended their work on AI-driven quality assessment for carbon credit projects in developing countries, incorporating broader risk identification frameworks. Zhang and Ma [125] developed machine learning-based credit risk assessment methods for green bonds that integrate climate factors into default prediction models. Building energy analytics have been further refined by Zhang and Zheng [126], who applied machine learning to building energy consumption prediction and carbon reduction potential assessment. The equity implications of energy transition policies have been systematically analyzed using AI-assisted identification methods [127], providing policymakers with evidence on the distributional effects of decarbonization strategies.

7.6 Cross-Border Financial Intelligence and Public Finance

Cross-border financial crime detection has become increasingly important in the globalized economy. Kang, Li, and Meng [128] proposed an AI-enhanced risk identification and intelligence sharing framework for anti-money laundering in cross-border income swap transactions, demonstrating the value of collaborative intelligence in combating financial crime. Kang and Ma [129] further developed AI-based pattern recognition capabilities for characterizing cross-border money laundering behaviors in digital currency transactions, addressing the unique challenges posed by cryptocurrency-facilitated financial crime.

Public finance transparency and civic engagement have also benefited from AI-enhanced visualization technologies. Kang, Li, and Meng [130] investigated the impact of government budget data visualization on public financial literacy and civic engagement, finding that well-designed visual representations significantly improve public understanding of fiscal matters. The impact of financial data visualization techniques on enhancing budget transparency in local government decision-making was examined by Kang and Yu [131], demonstrating that transparency mechanisms can strengthen democratic accountability.

International financial market dynamics have been analyzed using AI-driven approaches. Kang, Min, and Yuan [132] conducted a comparative analysis of foreign exchange market shock transmission and recovery resilience among major economies under geopolitical conflicts, using the Russia-Ukraine crisis as a case study. Finally, Kang, Zhang, and Chen [133] developed AI-assisted analysis of policy communication during economic crises, examining correlations with market confidence and recovery outcomes, providing insights into the role of strategic communication in financial stability.

8. Discussion

8.1 Cross-Cutting Themes and Methodological Trends

Our comprehensive review of 133 research contributions reveals several cross-cutting themes that transcend individual application domains. First, deep learning architectures—including convolutional neural networks, recurrent neural networks, attention mechanisms, and transformer-based models—constitute the dominant

methodological foundation across virtually all domains examined. Second, privacy-preserving techniques, particularly differential privacy and federated learning, have emerged as essential components of responsible AI system design, reflecting growing regulatory requirements and societal expectations for data protection. Third, multi-modal data fusion approaches have demonstrated consistent advantages over single-modality methods, suggesting that the integration of heterogeneous data sources represents a broadly applicable strategy for improving AI system performance.

8.2 Challenges and Limitations

Despite the impressive breadth and depth of recent AI research, several significant challenges persist. Model interpretability remains a critical barrier to adoption in high-stakes domains such as healthcare and finance, where regulatory frameworks increasingly demand that AI-driven decisions be explainable. The fairness and bias properties of AI systems require ongoing attention, as algorithmic bias can perpetuate or amplify existing societal inequalities. Additionally, the reproducibility of reported results across different datasets and deployment environments remains an open concern, with many studies evaluating their methods on limited or proprietary datasets that preclude independent verification.

8.3 Emerging Opportunities

Several emerging trends suggest promising directions for future research. The convergence of large language models with domain-specific knowledge systems offers the potential for more capable and contextually aware AI assistants. The integration of reinforcement learning with real-world feedback mechanisms enables adaptive systems that can improve their performance through interaction with complex environments. Furthermore, the growing emphasis on AI for sustainability—including applications in carbon management, energy efficiency, and equitable resource allocation—positions AI as a key enabler of the global transition to a more sustainable economy.

9. Conclusion

This survey has provided a comprehensive overview of 133 recent research contributions spanning the application of artificial intelligence across healthcare, finance, cybersecurity, privacy preservation, environmental sustainability, document intelligence, and numerous specialized domains. Our analysis reveals that AI technologies have achieved remarkable breadth of application, with deep learning, federated learning, differential privacy, and multi-modal fusion serving as common methodological pillars. At the same time, significant challenges remain in areas such as model interpretability, algorithmic fairness, cross-domain generalization, and the translation of research prototypes into production systems. As AI continues to evolve, we anticipate that future research will increasingly focus on responsible AI development, with greater emphasis on transparency, fairness, and alignment with societal values. The diverse body of work reviewed in this survey provides a solid foundation for researchers and practitioners seeking to understand the current state of AI and identify promising directions for future investigation.

References

[1]. Guan, H. (2025). Medical Terminology Definition-Enhanced Retrieval-Augmented Generation for Hallucination Mitigation in Medical Question Answering. Journal of Science, Innovation & Social Impact, 1(1), 222-240.

[2]. Guan, H. (2025). Context-Aware Semantic Ambiguity Resolution in Cross-Cultural Dialogue Understanding. Journal of Sustainability, Policy, and Practice, 1(2), 136-147.

[3]. Wang, Z. (2025). DeepMotionNet: AI-Driven Predictive Animation State Transitions for Reducing Perceptual Latency in Competitive FPS Games. In 2025 6th ICCEA (pp. 01-08). IEEE.

[4]. Wang, Z. (2025). Deep Learning-Based Prediction Technology for Communication Effects of Animated Character Facial Expressions. Journal of Sustainability, Policy, and Practice, 1(4), 105-116.

[5]. Wang, Z. (2025). Cultural-Intelligent Dynamic Medical Animation Generation for Cross-Lingual Telemedicine Communication Enhancement. Journal of Science, Innovation & Social Impact, 1(1), 209-221.

[6]. Li, X. (2025). Privacy-Preserving Feature Attribution Explanations for Large-Scale Recommendation Systems. Journal of Science, Innovation & Social Impact, 1(1), 19-32.

[7]. Ye, H. (2025). AI-Enhanced Detection of Dynamic Structural Changes in Inflammatory Protein Interfaces. In 2025 6th ICCEA (pp. 2173-2180). IEEE.

[8]. Ye, H. (2025). Deep Reinforcement Learning-Driven Efficacy-Toxicity Balance Optimization for Personalized Drug Combination. Journal of Science, Innovation & Social Impact, 1(1), 307-317.

[9]. Wang, Y. (2025). Data-Driven Analysis of Transportation Route Efficiency and Carbon Emission Correlation. Journal of Science, Innovation & Social Impact, 1(1), 253-264.

[10]. Lu, X. (2025). Adaptive Optimization of Advertising Creative Visual Elements Based on Multi-dimensional User Behavior Data. In Proceedings of the 2025 ICGAIB (pp. 360-368).

[11]. Lu, X. (2025). Research on Mobile Advertising Click-Through Rate Prediction Algorithm Based on Differential Privacy. Journal of Science, Innovation & Social Impact, 1(1), 362-371.

[12]. Ge, L. (2025). Efficiency Comparison of Automated Tools versus Traditional Methods in Anti-Money Laundering Compliance Auditing. Journal of Science, Innovation & Social Impact, 1(1), 265-277.

[13]. Pan, Z. (2024). Privacy-Aware AI for Rare-Disease Patient Discovery and Targeted Outreach. Spectrum of Research, 4(1).

[14]. Zhang, J. (2025). Privacy-Preserving Revenue Transparency on Creator Platforms. Spectrum of Research, 5(2).

[15]. Huang, Y. (2024). Adaptive Importance Sampling for Jump-Diffusion CVA. Academia Nexus Journal, 3(3).

[16]. Huang, Y. (2025). Enhanced Feature Engineering for Real-Time Detection of Synthetic Identity Fraud and Money Laundering. Journal of Science, Innovation & Social Impact, 1(1), 384-397.

[17]. Lei, Y. (2025). Adaptive Privacy-Preserving Techniques for Multimedia Content Processing in Cloud Environments. Journal of Science, Innovation & Social Impact, 1(1), 278-293.

[18]. Cheng, Z. (2025). AI Enabled Cardiovascular Disease Risk Prediction through Multimodal Data Fusion. Journal of Sustainability, Policy, and Practice, 1(2), 98-109.

[19]. Cheng, Z. (2025). Graph Attention-Based Feature Selection for Multi-Omics Drug Target Prediction in Cardiovascular Diseases. Journal of Science, Innovation & Social Impact, 1(1), 294-306.

[20]. Cai, Y. (2025). NLP-Enhanced Predictive Analytics for UHNW Client Investment Behavior. In Proceedings of the 2025 2nd ICDBA (pp. 185-191).

[21]. Cai, Y. (2025). NLP-Quantified ESG News Sentiment and Portfolio Outcomes. Annals of Applied Sciences, 6(1).

[22]. Long, X. (2025). Research on Intelligent Firmware Vulnerability Detection and Priority Assessment. Journal of Science, Innovation & Social Impact, 1(1), 350-361.

[23]. Shi, X. (2024). Spatiotemporal Preference Modeling for Ride-Hailing and Context-Aware Recommendations. Spectrum of Research, 4(2).

[24]. Shi, X. (2025). Intelligent Credit Risk Assessment for SMEs Based on Multi-dimensional Data Fusion. In Proceedings of the 2025 ICGAIB (pp. 186-196).

[25]. Han, J. (2025). AI-Enhanced Cybersecurity for Financial Networks: A Federated Learning Implementation. Journal of Science, Innovation & Social Impact, 1(1), 241-252.

[26]. Han, J. (2025). Multi-source Text Mining for Risk Signal Detection in Asset-Backed Securities Market. In Proceedings of the 2025 ISMLSC (pp. 497-506).

[27]. Wang, J. (2025). Multi-Source Data Fusion for Short-Term Demand Forecasting of Seasonal Retail Products. Journal of Science, Innovation & Social Impact, 1(1), 340-349.

[28]. Zhang, C. (2025). Enhanced Multi-Modal Feature Fusion Algorithm for Early-Stage Cancer Detection. Journal of Science, Innovation & Social Impact, 1(1), 318-328.

[29]. Deng, M. (2025). Real-Time Fraud Risk Scoring through Behavioral Sequence Analysis. Journal of Sustainability, Policy, and Practice, 1(4), 130-142.

[30]. Guo, Y. (2025). Reliability Assessment and Adaptive Fusion Algorithm for Multi-Sensor Data in Autonomous Driving. Journal of Sustainability, Policy, and Practice, 1(4), 143-155.

[31]. Bai, Y. (2025). Effectiveness Evaluation of Adaptive Difficulty Adjustment Algorithms for Social Skills Training in ASD Children. Journal of Sustainability, Policy, and Practice, 1(4), 117-129.

[32]. Wang, Z., & Kang, A. (2025). FTAFO: A Federated Transparent Adaptive Financial Optimizer. Journal of Science, Innovation & Social Impact, 1(1), 329-339.

[33]. Dong, Z., & Jia, R. (2025). Adaptive Dose Optimization Algorithm for LED-based Photodynamic Therapy. Journal of Sustainability, Policy, and Practice, 1(3), 144-155.

[34]. Dong, Z., & Zhang, F. (2025). Deep Learning-Based Noise Suppression and Feature Enhancement for LED Medical Imaging. Journal of Science, Innovation & Social Impact, 1(1), 9-18.

[35]. Ren, W., Wu, X., & Li, J. (2025). AI-Driven Network Threat Behavior Pattern Recognition and Classification. Journal of Advanced Computing Systems, 5(9), 1-13.

[36]. Wu, X., Li, J., & Ren, W. (2024). Risk Assessment Framework for Data Leakage Prevention Using Machine Learning. Artificial Intelligence and Machine Learning Review, 5(3), 55-66.

[37]. Ren, W., Li, J., & Wu, X. (2024). Privacy-Preserving Data Analysis Using Federated Learning. Artificial Intelligence and Machine Learning Review, 5(1), 40-50.

[38]. Zhang, D., & Wang, Y. (2025). AI-Driven Quality Assessment and Investment Risk Identification for Carbon Credit Projects. Pinnacle Academic Press Proceedings Series, 3, 76-92.

[39]. Zhang, D., & Zheng, Q. (2025). Machine Learning-Based Building Energy Consumption Prediction and Carbon Reduction. Journal of Industrial Engineering and Applied Science, 3(5), 27-40.

[40]. Zhang, D., & Zhang, F. (2025). AI-Assisted Identification and Equity Assessment of Vulnerable Population Impacts in US Energy Transition. Journal of Advanced Computing Systems, 5(7), 1-17.

[41]. Shang, Z., & Wei, W. (2025). Evolving Security in LLMs: A Study of Jailbreak Attacks and Defenses. arXiv preprint arXiv:2504.02080.

[42]. Wang, Z., & Kang, A. (2025). FTAFO: A Federated Transparent Adaptive Financial Optimizer. Journal of Science, Innovation & Social Impact, 1(1), 329-339.

[43]. Wang, Z., & Kang, A. (2025). FTAFO: A Federated Transparent Adaptive Financial Optimizer. Journal of Science, Innovation & Social Impact, 1(1), 329-339.

[44]. Wu, Z., Zhang, Z., Zhao, Q., & Yan, L. (2025). Privacy-preserving financial systems. Shang, Z., Wei, W., & Bai, W. (2025). Evolving security in LLMs. arXiv preprint arXiv:2504.02080.

[45]. Ren, W., Wu, X., & Li, J. (2025). AI-Driven Network Threat Behavior Pattern Recognition. Journal of Advanced Computing Systems, 5(9), 1-13.

[46]. Wu, X., Li, J., & Ren, W. (2024). Risk Assessment Framework for Data Leakage Prevention. Artificial Intelligence and Machine Learning Review, 5(3), 55-66.

[47]. Ren, W., Li, J., & Wu, X. (2024). Privacy-Preserving Data Analysis Using Federated Learning. Artificial Intelligence and Machine Learning Review, 5(1), 40-50.

[48]. Tu, W., Wan, G., Shang, Z., & Du, B. (2025). Efficient relational context perception for knowledge graph completion. Applied Intelligence, 55(15), 1005.

[49]. Weng, H., & Lei, Y. (2024). Cross-Modal Artifact Mining for Generalizable Deepfake Detection. Journal of Computing Innovations and Applications, 2(2), 78-87.

[50]. Shi, X., & Weng, H. (2024). Comparative Analysis of Unsupervised Learning Approaches for Anomalous Billing Pattern Detection. Journal of Computing Innovations and Applications, 2(1), 111-127.

[51]. Weng, H. (2025). Deep Embedding Clustering with Adaptive Feature Selection for Banking Customer Segmentation. Spectrum of Research, 5(2).

[52]. Deng, M. (2025). Early Detection of Malicious Accounts on Social Platforms Based on Temporal Graph Feature Learning. In Proceedings of the 2025 8th ICISAI (pp. 1320-1328).

[53]. Zhong, M. (2025). Adaptive Anomaly Detection Threshold for Financial Data Quality Monitoring. In Proceedings of the 2025 ISAICSS (pp. 578-587).

[54]. Wang, Z. (2025). Machine Learning-Driven Investor-Asset Matching in Commercial Real Estate. In Proceedings of the 2025 2nd ICDECS (pp. 1110-1118).

[55]. Wang, J. (2025). AI-Driven Seasonal Consumption Forecasting and Resource Allocation in Luxury Brand Marketing. In Proceedings of the 2025 2nd ICDECS (pp. 1119-1127).

[56]. Long, X. (2025). Machine Learning-Based Power Consumption Prediction for Enterprise Servers. In Proceedings of the 2025 8th ICISAI (pp. 1310-1319).

[57]. Han, J. (2025). Multi-source Text Mining for Risk Signal Detection in ABS Market. In Proceedings of the 2025 ISMLSC (pp. 497-506).

[58]. Zhang, C. (2025). Comparative Study of AI Algorithms in Personalized Ovarian Stimulation Protocol Optimization. In Proceedings of the 4th ICAIIP (pp. 654-662).

[59]. Guan, H. (2025). Intelligent Detection and Protection of PII in Clinical Text. Journal of Science, Innovation & Social Impact, 1(2), 41-52.

[60]. Zhong, M. (2026). Optimization of Anomaly Detection Algorithms for Consumer Credit Default Rates. Journal of Sustainability, Policy, and Practice, 2(1), 44-54.

[61]. Guo, Y. (2025). Performance Evaluation of Lightweight Detection Algorithms on Compact LiDAR-Camera Configurations. Journal of Science, Innovation & Social Impact, 1(1), 398-409.

[62]. Zhang, Q. (2025). Comparative Analysis of Pre-Trained Language Models for Medical Document Classification. Journal of Sustainability, Policy, and Practice, 1(4), 205-221.

[63]. Deng, M. (2025). Graph-Based Temporal Behavior Analysis for Early Detection of Coordinated Malicious Accounts. Journal of Science, Innovation & Social Impact, 1(2), 96-106.

[64]. Ye, H. (2025). Bayesian Optimization-Based AI Framework for Nanobody Screening. Journal of Sustainability, Policy, and Practice, 1(4), 16-31.

[65]. Zhang, J. (2024). Performance Evaluation of ML Algorithms for Anomalous Login Behavior Detection. Artificial Intelligence and Machine Learning Review, 5(2), 77-90.

[66]. Min, S., & Wei, C. (2023). Comparative Analysis of Filter-based Feature Selection Methods for High-Dimensional Data. Journal of Advanced Computing Systems, 3(8), 25-38.

[67]. Wei, C., & Wu, C. (2024). Credit Risk Transmission Mechanism in Supply Chain Finance. Artificial Intelligence and Machine Learning Review, 5(2), 101-115.

[68]. Ge, L. (2024). Enhancing Financial Audit Efficiency Through RPA Implementation. Journal of Computing Innovations and Applications, 2(1), 62-73.

[69]. Lei, Y., & Holloway, V. (2024). Adaptive Learning-Enhanced Convex Optimization for Cloud Resource Scheduling. Journal of Advanced Computing Systems, 4(11), 73-85.

[70]. Shi, X. (2024). Adaptive Privacy Budget Allocation for Multi-Institutional Federated Learning in Healthcare. Journal of Advanced Computing Systems, 4(2), 50-61.

[71]. Li, Z., & Wang, Z. (2024). AI-Driven Procedural Animation Generation for Personalized Medical Training. Artificial Intelligence and Machine Learning Review, 5(3), 111-123.

[72]. Wei, C., & Guan, H. (2024). Privacy-Preserving Federated Learning in Medical AI: A Systematic Review. Artificial Intelligence and Machine Learning Review, 5(3), 124-135.

[73]. Li, Z., & Wang, Z. (2024). Adaptive Cross-Cultural Medical Animation. Artificial Intelligence and Machine Learning Review, 5(1), 117-128.

[74]. Zhang, F., Ye, H., & Wei, C. (2024). Leveraging Multi-Modal Attention Mechanisms for Interpretable Biomarker Discovery. Journal of Computing Innovations and Applications, 2(2), 111-121.

[75]. Xiao, P., Wang, Y., & Montgomery, I. (2024). Deep Reinforcement Learning for Route Optimization in E-commerce Return Management. Journal of Computing Innovations and Applications, 2(2), 100-110.

[76]. Jia, R., Lu, X., & Whitmore, S. (2024). Feature-Based Detection of Bot Traffic and Click Fraud in Mobile Advertising. Journal of Computing Innovations and Applications, 2(1), 140-152.

[77]. Wei, C., Ge, L., & Brooks, N. (2024). Graph-based Representation Learning for Financial Fraud Detection. Journal of Computing Innovations and Applications, 2(1), 153-164.

[78]. Jia, R., Zhang, J., & Prescot, J. (2024). An Empirical Study of LLMs for Threat Intelligence Analysis. Journal of Computing Innovations and Applications, 2(1), 99-110.

[79]. Li, Z., Huang, Y., & Montgomery, I. (2024). Feature Attribution-Based Explainability Analysis for Market Risk Stress Scenarios. Journal of Computing Innovations and Applications, 2(2), 136-150.

[80]. Weng, H., & Lei, Y. (2024). Cross-Modal Artifact Mining for Generalizable Deepfake Detection. Journal of Computing Innovations and Applications, 2(2), 78-87.

[81]. Zhang, F., Cheng, Z., & Holloway, V. (2024). Deep Learning in Cardiovascular CT Imaging: Evolution and Clinical Translation. Journal of Computing Innovations and Applications, 2(2), 88-99.

[82]. Crowford, A., Cai, Y., & Langford, V. (2024). ML-Enhanced Dynamic Asset Allocation in Target-Date Investment Strategies. Journal of Computing Innovations and Applications, 2(2), 122-135.

[83]. Hu, J., & Long, X. (2024). Graph Learning-Based Behavioral Detection for Software Supply Chain Attacks. Journal of Advanced Computing Systems, 4(4), 49-60.

[84]. Shi, X., & Weng, H. (2024). Unsupervised Learning Approaches for Anomalous Billing Pattern Detection. Journal of Computing Innovations and Applications, 2(1), 111-127.

[85]. Zhang, S., Jia, R., & Li, Z. (2024). Agentic AI Across Domains: A Comprehensive Review. Journal of Computing Innovations and Applications, 2(1), 86-98.

[86]. Weng, H. (2025). Deep Embedding Clustering for Banking Customer Segmentation. Spectrum of Research, 5(2).

[87]. Li, Y., & Ling, Z. (2026). Real-Time Multi-Risk Early Warning for Community Banks. Journal of Advanced Computing Systems, 6(2), 15-27.

[88]. Cao, H. (2024). Privacy-Preserving Click Pattern Anomaly Detection for Mobile Advertising Fraud. Journal of Computing Innovations and Applications, 2(2), 151-161.

[89]. Han, J., & Cao, G. (2024). A Comparative Study of Multi-source Data Fusion for Credit Default Early Warning. Artificial Intelligence and Machine Learning Review, 5(1), 105-116.

[90]. Zhong, M. (2024). Time-Decay Aware Incremental Feature Extraction for Transaction Fraud Detection. Artificial Intelligence and Machine Learning Review, 5(3), 136-145.

[91]. Chen, Y. (2024). Explainable Attack Path Reasoning for ICS Security Based on Knowledge Graphs. Journal of Computing Innovations and Applications, 2(1), 128-139.

[92]. Zhang, Q. (2026). Adaptive OCR Engine Selection for Multi-Format Government Document Digitization. Artificial Intelligence and Machine Learning Review, 7(1), 29-39.

[93]. Shi, W., & Cheng, Z. (2024). Enhanced Adaptive Threshold Algorithms for Real-Time Cardiovascular Risk Prediction from Wearable HRV Data. Journal of Advanced Computing Systems, 4(1), 46-57.

[94]. Shi, W., & Wang, J. (2026). Intelligent Path Optimization for Carbon-Constrained Last-Mile Delivery. Journal of Advanced Computing Systems, 6(1), 19-31.

[95]. Cao, H. (2024). Detecting Fraudulent Click Patterns in Mobile In-App Browsers. Artificial Intelligence and Machine Learning Review, 5(2), 130-142.

[96]. Zhang, C. (2024). Deep Learning Dose Optimization for Intensity-Modulated Radiotherapy. Artificial Intelligence and Machine Learning Review, 5(2), 116-129.

[97]. Wang, Z. (2024). Adaptive Generation of Medical Education Animations for Enhanced Health Literacy. Journal of Advanced Computing Systems, 4(1), 30-45.

[98]. Bai, Y. (2025). Deep Learning-based Action Recognition for ASD Children's Video Therapy. In Proceedings of the 2025 ISAICSS (pp. 307-314).

[99]. Lei, Y. (2025). Intelligent Prediction and Dynamic Scheduling for Cloud Computing Resources. In Proceedings of the 2025 ISMLSC (pp. 59-67).

[100]. Wei, C., & Pan, Z. (2026). Accelerating Clinical Trial Recruitment Through Automated Eligibility Screening. Journal of Computing Innovations and Applications, 4(1), 1-11.

[101]. Bai, Y., & Xiao, P. (2026). Adaptive Prompt Selection and Fading Optimization for Autism Skill Acquisition. Journal of Advanced Computing Systems, 6(1), 32-44.

[102]. Deng, M., & Zou, D. (2026). Cross-Modal Content Consistency Verification in Social Media Misinformation Detection. Artificial Intelligence and Machine Learning Review, 7(1), 40-52.

[103]. Shi, W., & Bai, Y. (2024). Adaptive Learning Rate Optimization for Personalized ASD Educational Interventions. Artificial Intelligence and Machine Learning Review, 5(4), 128-138.

[104]. Liang, D. (2026). Risk Level Classification of Contingent Liability Clauses Using NLP. Artificial Intelligence and Machine Learning Review, 7(1), 53-68.

[105]. Han, J. (2026). Network-Based Identification of Risk Contagion Pathways Between US Credit and Equity Markets. Journal of Advanced Computing Systems, 6(2), 50-63.

[106]. Zhang, Q. (2026). Improving Classification Accuracy for Unstructured Medical Documents via Multi-Engine OCR. Journal of Advanced Computing Systems, 6(2), 1-14.

[107]. Liu, Y. (2025). Explainable Risk Stratification for Hospital Readmission Management. Journal of Science, Innovation & Social Impact, 1(2), 107-118.

[108]. Han, M. (2025). Intelligent Recognition of Anomalous Behaviors in Medical Insurance Through Deep Learning. Journal of Science, Innovation & Social Impact, 1(1), 410-426.

[109]. Zhang, Q. (2025). Enhanced Feature Fusion and Transfer Learning for Multi-Format Government Document Classification. Journal of Science, Innovation & Social Impact, 1(1), 427-441.

[110]. Li, J. (2026). Style Genes: Leveraging Generative AI for Artwork Authentication. Journal of Sustainability, Policy, and Practice, 2(1), 87-100.

[111]. Han, M. (2026). Anatomy-Aware Contrastive Pre-training for Label-Efficient Medical Image Diagnosis. Journal of Sustainability, Policy, and Practice, 2(1), 55-70.

[112]. Li, J. (2025). Enhanced CNN-based Feature Extraction and Classification for Chinese Artwork Styles. Journal of Science, Innovation & Social Impact, 1(2), 135-148.

[113]. Zhong, M. (2025). Fairness-Aware Feature Attribution for Credit Scoring. Journal of Science, Innovation & Social Impact, 1(1), 442-451.

[114]. Zhang, H. (2026). NER Methods for Ownership Structure Extraction from M&A Due Diligence Documents. Journal of Sustainability, Policy, and Practice, 2(1), 71-86.

[115]. Zhang, H. (2025). Classifying Tenant Legal Inquiries: Traditional and Deep Learning Approaches. Journal of Science, Innovation & Social Impact, 1(1), 452-462.

[116]. Liang, D. (2026). Detecting Disclosure Discrepancies in SEC Filings via Deep Learning. Journal of Sustainability, Policy, and Practice, 2(1), 101-114.

[117]. Chung, P. T. (2025). Attention-Enhanced YOLO for Real-Time Defect Detection in 3D-Printed Dental Prostheses. Journal of Science, Innovation & Social Impact, 1(2), 119-134.

[118]. Huang, Y. (2025). Deep Learning-Enhanced Dynamic Margin Period of Risk Prediction for Counterparty Credit Risk. In Proceedings of the 2nd ICCDA (pp. 328-335).

[119]. Wang, Z., & Chu, Z. (2025). GAN-Based Intelligent Keyframe Interpolation for Character Animation. Journal of Science, Innovation & Social Impact, 1(2), 29-40.

[120]. Zhang, C., & Xiao, P. (2026). Optimizing Breast Cancer Recurrence Time Prediction with Attention-Enhanced LSTM. Journal of Advanced Computing Systems, 6(1), 80-98.

[121]. Zhang, D., & Feng, E. (2024). Quantitative Assessment of Regional Carbon Neutrality Policy Synergies. Journal of Advanced Computing Systems, 4(10), 38-54.

[122]. Dong, B., Zhang, D., & Xin, J. (2024). Deep Reinforcement Learning for High-Frequency Trading Strategies. Journal of Computing Innovations and Applications, 2(2), 33-43.

[123]. Trinh, T. K., & Zhang, D. (2024). Algorithmic Fairness in Financial Decision-Making. Journal of Advanced Computing Systems, 4(2), 36-49.

[124]. Zhang, D., & Wang, Y. (2025). AI-Driven Quality Assessment for Carbon Credit Projects in Developing Countries. Pinnacle Academic Press Proceedings Series, 3, 76-92.

[125]. Zhang, D., & Ma, X. (2025). ML-Based Credit Risk Assessment for Green Bonds. Journal of Sustainability, Policy, and Practice, 1(2), 121-135.

[126]. Zhang, D., & Zheng, Q. (2025). ML-Based Building Energy Consumption Prediction in US Metropolitan Areas. Journal of Industrial Engineering and Applied Science, 3(5), 27-40.

[127]. Zhang, D., & Zhang, F. (2025). AI-Assisted Identification of Vulnerable Population Impacts in US Energy Transition. Journal of Advanced Computing Systems, 5(7), 1-17.

[128]. Kang, A., Li, Z., & Meng, S. (2023). AI-Enhanced Risk Identification for AML in Cross-Border Income Swap Transactions. Journal of Advanced Computing Systems, 3(5), 34-47.

[129]. Kang, A., & Ma, X. (2025). AI-Based Pattern Recognition of Cross-Border Money Laundering in Digital Currency. In 2025 ICDIC (pp. 1-19). Pinnacle Academic Press.

[130]. Kang, A., Li, C., & Meng, S. (2025). Impact of Government Budget Data Visualization on Public Financial Literacy. Journal of Economic Theory and Business Management, 2(4), 1-16.

[131]. Kang, A., & Yu, K. (2025). Impact of Financial Data Visualization on Budget Transparency in Local Government. Spectrum of Research, 5(2).

[132]. Kang, A., Min, S., & Yuan, D. (2024). Comparative Analysis of FX Market Shock Transmission Under Geopolitical Conflicts. Journal of Computing Innovations and Applications, 2(1), 46-61.

[133]. Kang, A., Zhang, K., & Chen, Y. (2025). AI-Assisted Analysis of Policy Communication during Economic Crises. Pinnacle Academic Press Proceedings Series, 3, 159-173.