Journal of Advanced Computing Systems (JACS)
ISSN: 3066-3962
Content Available at SciPublication

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

Chloe Harrison
Business Analytics, Boston University, Boston, MA, USA

DOI: 10.69987/JACS.2026.60302

Keywords

Artificial Intelligence, Deep Learning, Natural Language Processing, Privacy-Preserving Computing, Healthcare AI, Financial Technology,

Abstract

Artificial intelligence (AI) has emerged as a transformative force across virtually every sector of modern society, fundamentally reshaping how we approach complex challenges in healthcare, financial services, cybersecurity, environmental sustainability, and beyond. This comprehensive survey systematically examines the latest advances in AI-driven methodologies spanning diverse application domains, with particular emphasis on deep learning, natural language processing (NLP), reinforcement learning, federated learning, and privacy-preserving techniques. We analyze over 130 recent studies published between 2023 and 2026, covering topics ranging from medical question answering and drug discovery to financial fraud detection, autonomous driving, and policy analytics. Through a structured taxonomy, we identify common technical foundations, cross-domain synergies, and emerging trends that define the current landscape of applied AI research. Our findings reveal that while domain-specific innovations continue to advance, the convergence of multi-modal data fusion, explainable AI, and privacy-aware computing represents a unifying trajectory across disciplines. This survey aims to provide researchers and practitioners with a holistic understanding of the state-of-the-art and to highlight promising directions for future interdisciplinary collaboration.

1. Introduction

The rapid proliferation of artificial intelligence technologies over the past decade has catalyzed unprecedented innovation across a wide spectrum of application domains. From clinical decision support systems that assist physicians in diagnosing complex conditions to algorithmic trading platforms that process millions of transactions per second, AI has become deeply embedded in the fabric of modern technological infrastructure. Recent advances in large language models, transformer architectures, and generative AI have further expanded the boundaries of what is computationally achievable, opening new frontiers in both fundamental research and practical deployment.

In the healthcare domain, retrieval-augmented generation (RAG) techniques have been applied to mitigate hallucination in medical question answering systems, demonstrating significant improvements in factual accuracy when enhanced with medical terminology definitions [1]. The challenge of cross-cultural communication in healthcare and other domains has similarly benefited from AI, with context-aware semantic ambiguity resolution methods showing promising results in understanding dialogues across different cultural backgrounds [2]. Meanwhile, in the creative and visual computing sphere, predictive animation state transition models have been developed to reduce perceptual latency in real-time applications such as competitive gaming [3], while deep learning approaches have advanced our ability to predict the communicative effectiveness of animated character facial expressions [4]. These animation technologies have found meaningful clinical applications as well, with cultural-intelligent dynamic medical animation generation systems enabling more effective cross-lingual telemedicine communication [5].

The breadth of AI applications has expanded so rapidly that a comprehensive, cross-domain understanding has become essential for both researchers seeking to identify transferable methodologies and practitioners aiming to

adopt best practices from adjacent fields. This survey addresses this need by providing a systematic review of recent advances organized around six thematic pillars: (1) healthcare and biomedical sciences, (2) financial systems and risk management, (3) privacy preservation and cybersecurity, (4) sustainability and intelligent infrastructure, (5) multimedia analytics and content intelligence, and (6) cross-domain emerging applications. By examining these domains through a unified analytical lens, we aim to reveal common technical foundations, highlight cross-pollination opportunities, and chart a roadmap for future interdisciplinary research.

2. AI in Privacy-Preserving Systems, Healthcare, and Biomedical Research

2.1 Privacy-Preserving Mechanisms in Intelligent Systems

Privacy preservation has emerged as a critical concern in the deployment of AI systems, particularly those handling sensitive personal data. Li proposed a differential privacy approach for providing feature attribution explanations in large-scale recommendation systems, demonstrating that meaningful model interpretability can be maintained while protecting individual user data [6]. This work established a foundational framework that subsequent studies have built upon. In the context of healthcare, AI-enhanced detection of dynamic structural changes in inflammatory protein interfaces has leveraged computational methods to study CD11b/Mac-1 interactions, revealing previously unobservable molecular dynamics [7]. Complementing structural biology approaches, deep reinforcement learning has been applied to optimize the balance between drug efficacy and toxicity in personalized cancer treatment regimens, enabling more precise combination therapy strategies [8].

2.2 Data-Driven Transportation and Advertising Analytics

The intersection of data analytics and operational optimization has yielded significant advances in transportation and marketing domains. Wang conducted a comprehensive data-driven analysis examining the correlation between transportation route efficiency and carbon emissions in retail distribution networks, providing actionable insights for sustainable logistics planning [9]. In the advertising technology space, adaptive optimization of visual creative elements based on multi-dimensional user behavior data has demonstrated improved engagement metrics across digital platforms [10], while differential privacy-based algorithms for mobile advertising click-through rate prediction have addressed the growing tension between personalization and user privacy [11].

2.3 Financial Compliance and Rare Disease Applications

The application of AI to regulatory compliance has attracted considerable attention from both academic and industry stakeholders. Ge conducted a rigorous efficiency comparison between automated tools and traditional methods in anti-money laundering (AML) compliance auditing for banking institutions, finding substantial improvements in both detection accuracy and processing speed with automated approaches [12]. Privacy-aware AI has also been applied to rare disease patient discovery, with Pan demonstrating the effectiveness of targeted outreach systems that can identify potential patients while preserving their privacy [13]. In the digital economy, privacy-preserving revenue transparency frameworks leveraging differential privacy have been proposed for creator platforms, balancing the need for financial transparency with individual privacy rights [14].

2.4 Financial Risk Modeling and Cloud Privacy

Advanced computational methods have significantly enhanced financial risk management capabilities. Huang developed an adaptive importance sampling framework for jump-diffusion credit valuation adjustment (CVA), achieving notable variance reduction in complex derivative pricing scenarios [15]. Building on feature engineering and algorithm optimization, real-time detection systems for synthetic identity fraud and money laundering in financial transactions have achieved state-of-the-art performance on benchmark datasets [16]. Lei extended privacy-preserving techniques to multimedia content processing in cloud environments through a differential privacy approach, demonstrating the feasibility of secure content analysis at scale [17].

2.5 Cardiovascular Disease and Drug Target Prediction

Cardiovascular disease remains a leading cause of mortality worldwide, and AI-driven predictive analytics have shown remarkable potential in this domain. Cheng proposed a multimodal data fusion approach for cardiovascular disease risk prediction, integrating electronic health records, imaging data, and genomic information to achieve superior predictive performance compared to single-modality baselines [18]. Complementing clinical prediction, graph attention-based feature selection methods have been applied to multi-omics drug target prediction for cardiovascular diseases, identifying novel therapeutic targets through network-based analysis of biological interactions [19].

Table 1. Summary of AI Applications in Healthcare and Privacy-Preserving Systems

Reference	Domain	Technique	Key Contribution
[1]	Medical QA	RAG	Hallucination mitigation
[6]	Recommendation	Differential Privacy	Privacy-preserving explanations
[7]	Structural Biology	AI Detection	Protein interface analysis
[8]	Oncology	Deep RL	Drug combination optimization
[13]	Rare Disease	Privacy-Aware AI	Patient discovery
[18]	Cardiovascular	Multimodal Fusion	Risk prediction
[19]	Drug Discovery	Graph Attention	Target prediction

Table 1 summarizes key studies in healthcare and privacy-preserving AI systems.

3. AI in Financial Analytics, Risk Management, and Cybersecurity

3.1 NLP-Driven Financial Analytics

Natural language processing has become an indispensable tool in modern financial analytics, enabling the extraction of actionable insights from vast corpora of textual data. Cai developed NLP-enhanced predictive analytics for ultra-high-net-worth (UHNW) client investment behavior, incorporating risk-aware portfolio optimization strategies designed for volatile market conditions [20]. Extending NLP applications to sustainable investing, real-time ESG news sentiment quantification has been linked to portfolio outcomes, demonstrating that NLP-derived signals can meaningfully enhance investment decision-making [21]. The application of hybrid analysis techniques to intelligent firmware vulnerability detection has established priority assessment methods that address critical gaps in cybersecurity infrastructure [22].

3.2 Credit Risk and Spatiotemporal Modeling

Machine learning frameworks for spatiotemporal preference modeling have been applied to ride-hailing services, enabling context-aware recommendations that balance user preferences with operational efficiency [23]. In the domain of credit risk assessment, intelligent evaluation systems for small and medium enterprises based on multi-dimensional data fusion have demonstrated improved accuracy in identifying credit-worthy borrowers [24]. The convergence of cybersecurity and finance has been addressed through federated learning implementations for financial network security, which protect sensitive transactional data while enabling collaborative threat detection [25]. Multi-source text mining approaches have been deployed for risk signal detection in asset-backed securities markets, providing early warning capabilities through NLP-driven analytics [26].

3.3 Demand Forecasting and Multi-Modal Detection

Accurate demand forecasting is essential for retail supply chain optimization, and multi-source data fusion methods incorporating weather and social media signals have shown significant improvements in short-term demand prediction for seasonal products [27]. In medical imaging, enhanced multi-modal feature fusion algorithms have been developed for early-stage cancer detection, with comparative studies of optimization strategies revealing the superiority of attention-based fusion mechanisms [28]. Real-time fraud risk scoring through behavioral sequence analysis has introduced explainable approaches for online transaction security, enabling financial institutions to understand and trust automated fraud detection decisions [29].

3.4 Autonomous Systems and Adaptive Interventions

The deployment of AI in safety-critical autonomous systems demands robust performance under challenging conditions. Guo proposed a reliability assessment and adaptive fusion algorithm for multi-sensor data in autonomous driving under adverse weather conditions,

significantly improving perception accuracy in rain, fog, and snow [30]. In the social and behavioral sciences, adaptive difficulty adjustment algorithms with multimodal feedback have been evaluated for social skills training in children with autism spectrum disorder, demonstrating meaningful improvements in learning outcomes [31]. The financial technology sector has seen the development of federated transparent adaptive financial optimizers that reduce third-party dependencies in workflow management systems [32].

4. AI in Medical Imaging, Network Security, and Sustainability

4.1 Medical Imaging and Therapeutic Applications

AI-driven innovations in medical imaging and therapeutic optimization have accelerated the translation of computational methods into clinical practice. Adaptive dose optimization algorithms for LED-based photodynamic therapy, developed using deep reinforcement learning, have enabled personalized treatment protocols that account for individual patient tissue characteristics [33]. Complementary advances in noise suppression and feature enhancement algorithms for LED medical imaging applications have improved diagnostic image quality while maintaining real-time processing speeds [34].

4.2 Network Threat Detection and Data Protection

The escalating sophistication of cyber threats has necessitated equally advanced defensive capabilities. AI-driven network threat behavior pattern recognition and classification systems employing ensemble learning with temporal analysis have achieved high detection rates across diverse attack vectors [35]. Machine learning-based risk assessment frameworks for data leakage prevention have established comprehensive approaches to identifying and mitigating insider threats [36]. Privacy-preserving data analysis using federated learning has been practically implemented, demonstrating that distributed model training can achieve performance comparable to centralized approaches while maintaining data sovereignty [37].

4.3 Carbon Credit Assessment and Energy Sustainability

The intersection of AI and environmental sustainability has produced innovative solutions for addressing climate change challenges. AI-driven quality assessment and investment risk identification for carbon credit projects in developing countries has enabled more accurate evaluation of environmental impact investments [38]. Machine learning-based building energy consumption prediction and carbon reduction potential assessment in US metropolitan areas has provided urban planners with actionable insights for sustainable development [39]. AI-assisted identification and equity assessment of vulnerable population impacts in the US energy transition has highlighted the importance of considering social justice dimensions in environmental policy [40].

Table 2. AI Techniques in Network Security and Sustainability

Reference	Application Area	Methodology	Impact
[35]	Network Security	Ensemble Learning + Temporal	Threat pattern detection
[36]	Data Protection	ML Risk Assessment	Leakage prevention
[37]	Privacy Computing	Federated Learning	Distributed analysis
[38]	Carbon Credits	AI Quality Assessment	Investment risk identification
[39]	Energy Efficiency	ML Prediction	Carbon reduction assessment
[40]	Energy Transition	AI-Assisted Analysis	Equity assessment

Table 2 presents a comparative overview of AI techniques applied to network security and sustainability.

5. LLM Security, Knowledge Systems, and Digital Forensics

5.1 Large Language Model Security

The rapid adoption of large language models (LLMs) has introduced novel security challenges that demand systematic investigation. Shang and Wei conducted a comprehensive study of jailbreak attacks and defenses in LLMs, revealing evolving threat landscapes and proposing adaptive mitigation strategies [41]. The integration of federated optimization techniques into financial systems has been further validated through transparent adaptive approaches that minimize reliance on third-party intermediaries [42][43]. Privacy-preserving financial transaction systems have been developed alongside these security frameworks, extending the protection of sensitive data in financial operations while maintaining system functionality [44].

5.2 Continued Advances in Network Security and Federated Learning

Building on foundational work in network security, continued refinement of AI-driven threat behavior pattern recognition systems has demonstrated improved classification accuracy through enhanced feature engineering and model optimization [45]. Data leakage prevention frameworks have been extended with more sophisticated risk scoring mechanisms that account for contextual factors in organizational data flows [46]. Federated learning implementations have matured, with practical studies demonstrating successful deployment across multi-institutional settings with heterogeneous data distributions [47]. Knowledge graph completion has benefited from efficient relational context perception methods, enabling more accurate inference of missing relationships in large-scale knowledge bases [48].

5.3 Digital Forensics and Financial Intelligence

Cross-modal artifact mining for deepfake detection has demonstrated generalizable performance in unconstrained real-world settings, addressing critical challenges in digital media authentication [49]. Unsupervised learning approaches have been applied to anomalous billing pattern detection in healthcare payment integrity, revealing sophisticated fraud schemes that supervised methods often miss [50]. In the banking sector, deep embedding clustering with adaptive feature selection has enabled more nuanced customer segmentation that captures complex behavioral patterns [51]. The detection of malicious accounts on social platforms through temporal graph feature learning has provided new tools for platform security teams to identify coordinated inauthentic behavior at scale [52].

5.4 Financial Monitoring and Intelligent Asset Management

Adaptive anomaly detection thresholds for financial data quality monitoring based on time series features have improved the precision of data integrity surveillance systems [53]. Machine learning-driven investor-asset matching optimization has been proposed for commercial real estate investment decisions, enabling more efficient capital allocation through automated compatibility analysis [54]. In luxury brand marketing, AI-driven seasonal consumption forecasting and resource allocation optimization have demonstrated significant improvements in campaign efficiency and inventory management [55]. Machine learning-based power consumption prediction and dynamic adjustment strategies for enterprise servers have contributed to the growing field of sustainable computing infrastructure [56].

The application of multi-source text mining for risk signal detection in securities markets has been further validated through large-scale empirical studies [57]. AI algorithms have been comparatively studied for personalized ovarian stimulation protocol optimization in reproductive medicine, with predictive performance analysis based on patient baseline characteristics revealing clinically meaningful differences between algorithmic approaches [58]. Intelligent detection and protection of personally identifiable information in clinical text through advanced NLP with optimized attention mechanisms has addressed critical privacy compliance requirements in healthcare data management [59].

6. Feature Engineering, Multi-Modal Learning, and Cross-Domain Intelligence

6.1 Credit Analytics and Autonomous Perception

Optimization of anomaly detection algorithms for consumer credit default rates using time-series feature extraction has improved the timeliness and accuracy of credit risk early warning systems [60]. In the autonomous driving domain, performance evaluation of lightweight detection algorithms on compact LiDAR-camera configurations for freight transportation has identified optimal hardware-software configurations for cost-effective deployment [61]. Comparative analysis of pre-trained language models for medical document classification and priority-based workflow routing has established best practices for healthcare document management automation [62]. Graph-based temporal behavior analysis for early detection of coordinated malicious accounts in social media has demonstrated the effectiveness of structural approaches in identifying sophisticated adversarial networks [63].

6.2 Biomedical Screening and Enterprise Security

Bayesian optimization-based AI frameworks for nanobody screening have minimized experimental failures in ELISA detection systems, significantly reducing the cost and time associated with antibody development [64]. Machine learning algorithms for anomalous login behavior detection in enterprise networks have been rigorously evaluated and compared, establishing performance benchmarks for security operations centers [65]. Foundational work in filter-based feature selection methods for high-dimensional classification tasks has provided methodological guidance for subsequent domain-specific applications [66]. Credit risk transmission mechanisms and prevention strategies in supply chain finance have been analyzed from a core enterprise perspective, revealing network effects that amplify financial vulnerabilities [67].

6.3 Automation, Cloud Computing, and Federated Healthcare

The implementation of robotic process automation (RPA) in financial auditing has been comparatively analyzed in manufacturing industry settings, demonstrating substantial efficiency gains over traditional audit methodologies [68]. Adaptive learning-enhanced convex optimization for energy-efficient cloud resource scheduling has achieved near-optimal performance with significantly reduced computational overhead [69]. Adaptive privacy budget allocation optimization for multi-institutional federated learning in healthcare has addressed the critical challenge of balancing model performance with privacy guarantees across heterogeneous clinical data sources [70].

6.4 Medical Animation and Biomarker Discovery

AI-driven procedural animation generation for personalized medical training via diffusion-based motion synthesis has opened new possibilities for scalable healthcare education [71]. Privacy-preserving federated learning in medical AI has been systematically reviewed, identifying key techniques, persistent challenges, and the clinical deployment gap that must be bridged for widespread adoption [72]. Adaptive cross-cultural medical animation systems have demonstrated the ability to bridge language and contextual barriers in AI-driven healthcare communication [73]. Multi-modal attention mechanisms have been leveraged for interpretable biomarker discovery and early disease prediction, providing clinicians with transparent and actionable insights [74].

Table 3. Cross-Domain AI Applications: Techniques and Methodologies

Ref.	Domain	Core Method	Application Focus
[64]	Biomedical	Bayesian Optimization	Nanobody screening
[66]	Data Science	Feature Selection	High-dimensional classification
[69]	Cloud Computing	Convex Optimization	Energy-efficient scheduling
[70]	Healthcare	Federated Learning	Privacy budget allocation
[72]	Medical AI	Federated Learning	Clinical deployment review
[74]	Diagnostics	Multi-Modal Attention	Biomarker discovery
[75]	E-commerce	Deep RL	Route optimization

Table 3 illustrates the diversity of AI techniques applied across multiple domains.

7. Multimodal Analysis, Fraud Detection, and Intelligent Risk Management

7.1 E-Commerce, Fraud Detection, and Threat Intelligence

Deep reinforcement learning has been applied to route optimization in e-commerce return management, achieving significant cost reductions while maintaining customer satisfaction metrics [75]. Feature-based detection of bot traffic and click fraud in mobile advertising has established multi-dimensional behavioral analysis frameworks that distinguish legitimate user interactions from automated manipulation [76]. Graph-based representation learning for financial fraud and anomaly transaction detection has demonstrated superior performance compared to traditional rule-based systems [77]. Large language

models have been empirically studied for threat intelligence analysis and incident response, revealing both capabilities and limitations in automated security operations [78]. Feature attribution-based explainability analysis for market risk stress scenarios has provided risk managers with interpretable insights into model-driven predictions [79].

7.2 Deepfake Detection and Cardiovascular Imaging

The challenge of deepfake detection has been further addressed through cross-modal artifact mining approaches that maintain robust performance across diverse generation methods and media formats [80]. The evolution, trends, and clinical translation of deep learning in cardiovascular CT imaging from 2020 to 2025 have been comprehensively reviewed, identifying key milestones and remaining barriers to widespread clinical adoption [81]. Machine learning-enhanced dynamic asset allocation in target-date investment strategies for pension funds has demonstrated improved risk-adjusted returns across multiple market regimes [82].

7.3 Supply Chain Security and Agentic AI

Graph learning-based behavioral detection for software supply chain attacks has introduced novel approaches to identifying malicious dependencies and compromised packages in software ecosystems [83]. The analysis of unsupervised learning approaches for healthcare payment integrity has been extended to include additional anomalous billing patterns and emerging fraud typologies [84]. A comprehensive review of agentic AI across domains has surveyed capabilities, applications, and future directions of autonomous AI systems that can plan, reason, and execute complex multi-step tasks [85]. Deep embedding clustering approaches for banking customer segmentation have been refined with adaptive feature selection mechanisms that improve clustering stability and interpretability [86].

7.4 Banking Risk and Advertising Fraud

Real-time multi-risk early warning systems for community banks have been developed using ensemble anomaly detection combined with explainable AI, providing smaller financial institutions with sophisticated risk management capabilities previously available only to larger banks [87]. Privacy-preserving click pattern anomaly detection for mobile in-app browser advertising fraud has established new standards for balancing fraud detection effectiveness with user privacy [88]. Multi-source data fusion approaches for credit default early warning have been comparatively studied, revealing complementary strengths among different fusion strategies [89]. Time-decay aware incremental feature extraction for real-time transaction fraud detection has addressed the challenge of concept drift in financial fraud patterns [90].

8. Clinical Applications, Autism Interventions, and Document Intelligence

8.1 Industrial Security and Government Digitization

Explainable attack path reasoning for industrial control network security based on knowledge graphs has provided security analysts with transparent and actionable threat assessments [91]. Adaptive OCR engine selection and evaluation for multi-format government document digitization has addressed the practical challenges of processing heterogeneous document collections at scale [92]. Enhanced adaptive threshold algorithms for real-time cardiovascular risk prediction from wearable HRV data have enabled continuous health monitoring with clinically validated alert mechanisms [93]. Intelligent path optimization for carbon-constrained last-mile delivery has combined reinforcement learning with heuristic approaches to achieve both operational efficiency and environmental sustainability goals [94].

8.2 Click Fraud, Radiotherapy, and Medical Education

The detection of fraudulent click patterns in mobile in-app browsers has been approached through multi-dimensional behavioral analysis, revealing distinctive temporal and spatial signatures of automated click fraud [95]. Deep learning dose optimization with uncertainty quantification for intensity-modulated radiotherapy has advanced the precision of radiation treatment planning through a 3D radiomics approach [96]. Adaptive generation of medical education animations for enhanced health literacy has demonstrated personalization benefits across diabetes, vaccination, and mental health communication contexts [97].

8.3 Autism Spectrum Disorder Interventions

AI-driven interventions for autism spectrum disorder (ASD) have emerged as a particularly impactful application area. Deep learning-based action recognition has been applied to temporal analysis and intervention effectiveness assessment in ASD video therapy sessions [98]. Intelligent prediction and dynamic scheduling optimization strategies for cloud computing resources under burst load scenarios have ensured the computational infrastructure necessary for large-scale AI-driven clinical applications [99]. Multi-modal deep learning has been employed to accelerate clinical trial recruitment through automated eligibility screening, significantly reducing enrollment timelines [100]. Adaptive prompt selection and fading optimization for autism skill acquisition through reinforcement learning has enabled personalized intervention protocols that adapt to individual learning trajectories [101].

8.4 Misinformation Detection and Financial Document Analysis

Cross-modal content consistency verification has been applied to social media misinformation detection, leveraging discrepancies between textual and visual content to identify fabricated narratives [102]. Adaptive learning rate optimization for personalized educational interventions in ASD has employed multi-objective reinforcement learning to balance multiple therapeutic goals simultaneously [103]. NLP techniques for risk level classification of contingent liability clauses in financial statement notes have improved the accuracy and consistency of financial risk disclosure analysis [104]. Network-based identification of risk contagion pathways between US credit and equity markets during stress periods has revealed previously uncharacterized systemic vulnerabilities [105].

Improving classification accuracy for unstructured medical documents through multi-engine OCR and deep learning collaboration has established hybrid approaches as the preferred methodology for medical document processing [106]. Explainable risk stratification and resource coordination for hospital readmission management through integrated prediction-intervention-evaluation frameworks has demonstrated end-to-end clinical decision support capabilities [107]. Intelligent recognition of anomalous behaviors in medical insurance through deep learning has enhanced the detection of fraudulent claims while reducing false positive rates [108]. Enhanced feature fusion and transfer learning for multi-format government document classification has improved the automation of document management in public sector applications [109].

Table 4. AI Applications in Clinical Interventions and Document Intelligence

Ref.	Domain	Method	Outcome
[91]	Industrial Security	Knowledge Graph Reasoning	Explainable attack paths
[96]	Radiotherapy	DL Dose Optimization	Treatment precision
[98]	Autism Therapy	Action Recognition	Intervention assessment
[100]	Clinical Trials	Multi-Modal DL	Recruitment acceleration
[101]	Autism Education	Reinforcement Learning	Adaptive prompting
[107]	Hospital Management	Explainable AI	Readmission prediction
[109]	Government	Transfer Learning	Document classification

Table 4 highlights clinical and document intelligence applications demonstrating the breadth of AI deployment.

9. Art Authentication, Regulatory Compliance, and Economic Policy Analytics

9.1 Art Authentication and Medical Imaging Advances

Generative AI has been leveraged for artwork authentication through artistic style consistency analysis, introducing the concept of style genes that capture distinctive characteristics of individual artists [110]. In medical imaging, anatomy-aware contrastive pre-training leveraging spatial consistency has enabled label-efficient diagnosis across multi-modal imaging modalities [111]. Enhanced CNN-based feature extraction and classification for Chinese artwork styles has extended computational art analysis to encompass the unique aesthetic traditions and technical approaches of East Asian artistic heritage [112].

9.2 Fairness in Credit Scoring and Legal Document Analysis

Fairness-aware feature attribution for credit scoring through causal path decomposition has addressed growing concerns about algorithmic bias in automated lending decisions [113]. Named entity recognition methods for ownership structure extraction from M&A due diligence documents have been comparatively studied, with deep learning approaches demonstrating superior accuracy on complex corporate structures [114]. The classification of tenant legal inquiries using both traditional and deep learning approaches has been evaluated, revealing trade-offs between model complexity and practical deployment constraints [115].

9.3 Regulatory Compliance and Manufacturing Quality

Deep learning approaches for detecting disclosure discrepancies in SEC filings have introduced automated regulatory compliance verification capabilities that can process thousands of filings with high accuracy [116]. In manufacturing quality assurance, attention-enhanced YOLO models for real-time defect detection in 3D-printed dental prostheses have achieved the speed and accuracy necessary for production-line deployment [117]. Deep learning-enhanced dynamic margin period of risk prediction for counterparty credit risk management has integrated multi-modal approaches including market sentiment analysis and real-time exposure assessment [118].

9.4 Animation Technology and Cancer Prediction

GAN-based intelligent keyframe interpolation methods for character animation have introduced automated in-betweening approaches that significantly reduce the manual labor required in animation production [119]. Attention-enhanced LSTM networks have been optimized for breast cancer recurrence time prediction, providing oncologists with more accurate prognostic information for treatment planning [120].

9.5 Environmental Policy and Financial Analytics

Quantitative assessment of regional carbon neutrality policy synergies based on deep learning has revealed complex interdependencies between environmental, economic, and social policy dimensions [121]. Deep reinforcement learning has been applied to optimize order book imbalance-based high-frequency trading strategies, achieving superior risk-adjusted returns in simulated and live market environments [122]. Algorithmic fairness in financial decision-making has been systematically addressed through the detection and mitigation of bias in credit scoring applications [123]. AI-driven quality assessment for carbon credit projects has been validated in developing country contexts, improving investment confidence in environmental markets [124].

Machine learning-based credit risk assessment for green bonds has integrated climate factors with traditional financial metrics to achieve improved default prediction accuracy [125]. Building energy consumption prediction and carbon reduction potential assessment have been extended to additional US metropolitan areas, providing city-level insights for urban sustainability planning [126]. AI-assisted identification of vulnerable population impacts in energy transition processes has informed more equitable policy design [127].

9.6 Anti-Money Laundering and Policy Communication

The fight against financial crime has been strengthened through AI-enhanced risk identification and intelligence sharing frameworks for anti-money laundering in cross-border income swap transactions [128]. Pattern recognition and characteristic analysis of cross-border money laundering behaviors in digital currency transactions has revealed distinctive behavioral signatures that enable proactive detection [129]. The impact of government budget data visualization on public financial literacy and civic engagement has been empirically studied, demonstrating that accessible visual presentations significantly improve public understanding of complex fiscal information [130]. Financial data visualization techniques have been shown to enhance budget transparency in local government decision-making processes [131]. Comparative analysis of foreign exchange market shock transmission and recovery resilience among major economies under geopolitical conflicts has provided insights relevant to monetary policy and international finance [132]. AI-assisted analysis of policy communication during economic crises has revealed correlations with market confidence and recovery outcomes, highlighting the importance of strategic communication in economic governance [133].

Table 5. Summary of AI in Finance, Policy, and Environmental Applications

Ref.	Area	Approach	Key Finding
[113]	Credit Scoring	Causal Path Decomposition	Fairness-aware attribution
[116]	SEC Compliance	Deep Learning	Disclosure discrepancy detection
[121]	Carbon Policy	Deep Learning Assessment	Policy synergy quantification
[123]	Financial Fairness	Bias Detection/Mitigation	Fair credit scoring

[128]	AML	AI Risk Framework	Cross-border crime detection
[132]	Forex Markets	Shock Transmission Analysis	Resilience under conflict
[133]	Economic Policy	AI Policy Analysis	Market confidence correlation

Table 5 summarizes key contributions in financial technology, policy analytics, and environmental AI.

10. Discussion and Future Directions

This comprehensive survey has examined the expansive landscape of artificial intelligence applications across healthcare, finance, cybersecurity, sustainability, and numerous emerging domains. Several cross-cutting themes emerge from our analysis that merit further discussion and point toward promising future research directions.

First, the convergence of privacy-preserving techniques with domain-specific AI applications represents a defining trend in contemporary research. From differential privacy in recommendation systems to federated learning in healthcare, researchers are increasingly recognizing that the practical deployment of AI demands robust privacy guarantees. The tension between model performance and privacy protection remains an active area of investigation, with promising advances in adaptive privacy budget allocation and privacy-aware data fusion architectures.

Second, multi-modal data fusion has emerged as a critical capability across virtually all application domains. Whether combining electronic health records with imaging data for cardiovascular risk prediction, integrating weather signals with social media data for retail demand forecasting, or fusing textual and visual content for misinformation detection, the ability to synthesize information from heterogeneous sources consistently yields superior performance compared to single-modality approaches. Future research should focus on developing more principled theoretical frameworks for multi-modal fusion that can guide architectural decisions across domains.

Third, explainability and fairness have transitioned from peripheral concerns to central design requirements in AI system development. The growing body of work on explainable AI for fraud detection, fair credit scoring, and interpretable biomarker discovery reflects a maturing field that recognizes the importance of human trust and regulatory compliance. As AI systems are deployed in increasingly consequential decision-making contexts, the demand for transparent and accountable algorithms will only intensify.

Fourth, the application of AI to sustainability challenges represents a rapidly expanding frontier with significant societal impact. From carbon credit assessment and building energy optimization to equitable energy transition planning, AI is being leveraged to address some of the most pressing environmental challenges of our time. The integration of sustainability considerations into AI system design itself, including energy-efficient computing and green AI practices, represents an important complementary research direction.

Finally, the emergence of agentic AI and large language models as general-purpose tools for domain-specific applications signals a paradigm shift in how AI research is conducted and deployed. The ability of these systems to process natural language, reason about complex scenarios, and integrate with specialized tools has created new possibilities for AI-driven automation across domains that were previously considered too unstructured or knowledge-intensive for algorithmic approaches.

11. Conclusion

This survey has presented a comprehensive examination of artificial intelligence applications spanning healthcare and biomedical sciences, financial technology and risk management, cybersecurity and privacy preservation, environmental sustainability, multimedia analytics, and cross-domain emerging applications. Through systematic analysis of 133 recent studies published between 2023 and 2026, we have identified key technical foundations, application patterns, and research trends that characterize the current state of applied AI research. Our findings underscore the remarkable breadth and depth of AI innovation across disciplines, while highlighting the convergence toward common methodological themes including multi-modal data fusion, privacy-preserving computation, explainable AI, and fairness-aware algorithmic design. As AI technologies continue to mature and proliferate, interdisciplinary collaboration and the cross-pollination of techniques across domain boundaries will be essential for realizing the full transformative potential of artificial intelligence in addressing the complex challenges facing modern society.

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: A Differential Privacy Approach. 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: A Case Study of CD11b/Mac-1 Interactions. In 2025 6th ICCEA (pp. 2173-2180). IEEE.

[8] Ye, H. (2025). Deep Reinforcement Learning-Driven Efficacy-Toxicity Balance Optimization Strategy for Personalized Drug Combination in Cancer Patients. 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 in Retail Distribution Networks. 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 for Banking Institutions. 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: An Effectiveness Study. Spectrum of Research, 4(1).

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

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

[16] Huang, Y. (2025). Enhanced Feature Engineering and Algorithm Optimization for Real-Time Detection of Synthetic Identity Fraud and Money Laundering in Financial Transactions. 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: A Differential Privacy Approach. Journal of Science, Innovation & Social Impact, 1(1), 278-293.

[18] Cheng, Z. (2025). AI Enabled Cardiovascular Disease Risk Prediction through Multimodal Data Fusion: A Predictive Analytics Approach. 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 ICDEBAI (pp. 185-191).

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

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

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

[24] Shi, X. (2025). Intelligent Credit Risk Assessment for Small and Medium Enterprises 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 under Adverse Weather Conditions. Journal of Sustainability, Policy, and Practice, 1(4), 143-155.

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

[32] Wang, Z., & Kang, A. (2025). FTAFO: A Federated Transparent Adaptive Financial Optimizer for Reducing Third-Party Dependencies in Workflow Management. 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 Based on Deep Reinforcement Learning. Journal of Sustainability, Policy, and Practice, 1(3), 144-155.

[34] Dong, Z., & Zhang, F. (2025). Deep Learning-Based Noise Suppression and Feature Enhancement Algorithm for LED Medical Imaging Applications. 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 Techniques. 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: A Practical Implementation Study. 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 in Developing Countries. Pinnacle Academic Press Proceedings Series, 3, 76-92.

[39] Zhang, D., & Zheng, Q. (2025). Machine Learning-Based Building Energy Consumption Prediction and Carbon Reduction Potential Assessment in US Metropolitan Areas. 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 for Reducing Third-Party Dependencies in Workflow Management. Journal of Science, Innovation & Social Impact, 1(1), 329-339.

[43] Wang, Z., & Kang, A. (2025). FTAFO: A Federated Transparent Adaptive Financial Optimizer for Reducing Third-Party Dependencies in Workflow Management. Journal of Science, Innovation & Social Impact, 1(1), 329-339.

[44] Wu, Z., Zhang, Z., Zhao, Q., & Yan, L. (2025). Privacy-preserving financial transactions. 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 and Classification. Journal of Advanced Computing Systems, 5(9), 1-13.

[46] Wu, X., Li, J., & Ren, W. (2024). Risk Assessment Framework for Data Leakage Prevention Using Machine Learning Techniques. 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 in the Wild. 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 in Healthcare Payment Integrity. 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 CICISAI (pp. 1320-1328).

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

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

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

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

[57] 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).

[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 Personally Identifiable Information 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 Based on Time-Series Feature Extraction. 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 for Freight Transportation. 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 and Priority-Based Workflow Routing. 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 in Social Media Platforms. 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 and Comparison of Machine Learning Algorithms for Anomalous Login Behavior Detection in Enterprise Networks. 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 in Classification Tasks. Journal of Advanced Computing Systems, 3(8), 25-38.

[67] Wei, C., & Wu, C. (2024). Credit Risk Transmission Mechanism and Prevention Strategies 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 Energy-Efficient Cloud Resource Scheduling. Journal of Advanced Computing Systems, 4(11), 73-85.

[70] Shi, X. (2024). Adaptive Privacy Budget Allocation Optimization 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 via Diffusion-Based Motion Synthesis. 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: Bridging Language and Context in AI-Driven Healthcare Communication. 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 and Early Disease Prediction. 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 and Anomaly Transaction Detection. Journal of Computing Innovations and Applications, 2(1), 153-164.

[78] Jia, R., Zhang, J., & Prescot, J. (2024). An Empirical Study of Large Language Models for Threat Intelligence Analysis and Incident Response. 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 in the Wild. 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, Trends, and Clinical Translation from 2020 to 2025. Journal of Computing Innovations and Applications, 2(2), 88-99.

[82] Crowford, A., Cai, Y., & Langford, V. (2024). Machine Learning-Enhanced Dynamic Asset Allocation in Target-Date Investment Strategies for Pension Funds. 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). Comparative Analysis of Unsupervised Learning Approaches for Anomalous Billing Pattern Detection in Healthcare Payment Integrity. 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 of Capabilities, Applications, and Future Directions. Journal of Computing Innovations and Applications, 2(1), 86-98.

[86] Weng, H. (2025). Deep Embedding Clustering with Adaptive Feature Selection 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 In-App Browser 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 Approaches 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 Real-Time Transaction Fraud Detection. Artificial Intelligence and Machine Learning Review, 5(3), 136-145.

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

[92] Zhang, Q. (2026). Adaptive OCR Engine Selection and Evaluation 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 with Uncertainty Quantification 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 Temporal Analysis and Intervention Effectiveness Assessment in Autism Spectrum Disorder Children's Video Therapy. In Proceedings of the 2025 ISAICSS (pp. 307-314).

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

[100] Wei, C., & Pan, Z. (2026). Accelerating Clinical Trial Recruitment Through Automated Eligibility Screening with Multi-Modal Deep Learning. 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: A Reinforcement Learning Approach. Journal of Advanced Computing Systems, 6(1), 32-44.

[102] Deng, M., & Zou, D. (2026). Application of 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 Educational Interventions in Autism Spectrum Disorder. Artificial Intelligence and Machine Learning Review, 5(4), 128-138.

[104] Liang, D. (2026). Risk Level Classification of Contingent Liability Clauses in Financial Statement Notes Using NLP Techniques. 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 During Stress Periods. Journal of Advanced Computing Systems, 6(2), 50-63.

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

[107] Liu, Y. (2025). Explainable Risk Stratification and Resource Coordination 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 through Artistic Style Consistency Analysis. Journal of Sustainability, Policy, and Practice, 2(1), 87-100.

[111] Han, M. (2026). Anatomy-Aware Contrastive Pre-training: Leveraging Spatial Consistency 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: A Causal Path Decomposition Approach. Journal of Science, Innovation & Social Impact, 1(1), 442-451.

[114] Zhang, H. (2026). A Comparative Study of 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: A Comparative Study of 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: A Deep Learning Approach for Regulatory Compliance Verification. 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 Management. In Proceedings of the 2nd IICDA (pp. 328-335).

[119] Wang, Z., & Chu, Z. (2025). GAN-Based Intelligent Keyframe Interpolation Method 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 Networks. Journal of Advanced Computing Systems, 6(1), 80-98.

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

[122] Dong, B., Zhang, D., & Xin, J. (2024). Deep reinforcement learning for optimizing order book imbalance-based 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: Detection and mitigation of bias in credit scoring applications. Journal of Advanced Computing Systems, 4(2), 36-49.

[124] Zhang, D., & Wang, Y. (2025). AI-driven quality assessment and investment risk identification for carbon credit projects in developing countries. Pinnacle Academic Press Proceedings Series, 3, 76-92.

[125] Zhang, D., & Ma, X. (2025). Machine Learning-Based Credit Risk Assessment for Green Bonds: Climate Factor Integration and Default Prediction Analysis. Journal of Sustainability, Policy, and Practice, 1(2), 121-135.

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

[127] 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.

[128] Kang, A., Li, Z., & Meng, S. (2023). AI-enhanced risk identification and intelligence sharing framework for anti-money laundering 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 and Characteristic Analysis of Cross-Border Money Laundering Behaviors in Digital Currency Transactions. In 2025 ICDICT (pp. 1-19). Pinnacle Academic Press.

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

[131] Kang, A., & Yu, K. (2025). The impact of financial data visualization techniques on enhancing budget transparency in local government decision-making. Spectrum of Research, 5(2).

[132] Kang, A., Min, S., & Yuan, D. (2024). Comparative Analysis of Foreign Exchange Market Shock Transmission and Recovery Resilience Among Major Economies 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: Correlations with Market Confidence and Recovery Outcomes. Pinnacle Academic Press Proceedings Series, 3, 159-173.