

PREFACE

We are pleased to present the proceedings of the 2026 International Conference on Computing Innovation and Engineering System (CIES 2026), held in Shenzhen, China. This distinguished event serves as a dynamic platform for showcasing cutting-edge research at the intersection of computing innovation, next-generation engineering systems, and intelligent technological applications. We welcome scholars, engineers, and industry leaders to submit original papers presenting theoretical advancements, practical implementations, and interdisciplinary insights that drive progress across these rapidly evolving domains.

The papers included in this volume were selected after a rigorous peer-review process. They cover a wide spectrum of topics, including empirical research, theoretical frameworks, and case studies that address the evolving challenges in the global landscape. These contributions reflect the latest trends and offer practical solutions in the fields of computing innovation and engineering system.

We express our sincere gratitude to the authors for their contributions and to the Technical Program Committee for their professional expertise in ensuring the quality of this publication. We hope these proceedings will inspire further research and cross-disciplinary collaboration.

The Organizing Committee of CIES 2026

CN 11-9251/G

ISSN 1671-6787

Copyright © CORE PRESS FOR SCIENCES

cooperation@cpsscience.com

CONTENTS

Breaking the Trilemma: Synergistic Strategies for High-Performance Flexible Strain Sensors Haotian Yu	1
A Review of Mathematical Foundations and Performance Comparison of Mainstream RLWE-based Homomorphic Encryption Schemes Renjie Tong	11
A Review of Research on Computer Vision-Based Analysis and Diagnosis of Tongue Patterns in Traditional Chinese Medicine Qu Xiaoying	21
Safety Alignment of Large Language Models: The Offensive-Defensive Game Mechanism under Multi-round Adversarial Prompting Xinyue Gao	33
Shared Search Tree-Based Multi-Objective Dynamic Path Planning: An Enhanced D* Lite Approach Minyu Wu	38
A Lightweight and Communication-Efficient Protection Framework for RAG Retrieval via Heterogeneous Local Differential Privacy Jiawei Hai	44
The Current Application Status and Future Trend Outlook of Artificial Intelligence Visual Technology in Pet Behavior Interaction Junyu Liu	50
Research on the Theoretical Mechanism and Engineering Application of Magnetic Field-Coil Interaction Yuan Shuai	55
Research on the Architecture Design of Future Optical Communication Systems Driven by Digital Signals Ruiqi Chen	62
3D Motion Prediction in Multi-Domain Application Scenarios: Methods, Challenges and Future Directions Chris Chen	67
Construction and Application of an MDP-Based Dynamic Decision Framework for Professional Sports Team Management Yishan Hou*, Meihan Jiang, Yingnan Zhao	74
Privacy-Preserving Content Governance: A Comprehensive Survey on zk-Promises and Stateful Anonymous Accountability Bi Yunxi	81
A Review of Deep Learning-Based Image Style Transfer Methods: From Gatys to Diffusion Models Liu Yuyan	91
A Study on Adaptive Robust Hybrid Algorithms for Fiber Optic Amplifiers and Their Application in Intelligent Parameter Identification	

Dan Xiaoxia.....	97
Research Progress on Grid Connection Control Technology of AC-DC Converter in Vehicle-to-Grid Interaction (V2G)	
Chengkang Shao.....	102
A Survey of Multimodal Emotion Recognition	
Liu Xinyu	110
Research on the Optimization Method of Spark-based Reinforcement Learning in Dynamic Pricing of Airline Tickets	
Xiwen Hu	116
Reliability and Bias of Different Large Language Models in IELTS Writing Score	
Liangyu Wang	126
“Visible” Intelligence: Designing NPC Decision Explanation Interfaces Based on Web High-Fidelity Prototypes and Empirical Study of Player Trust	
Aorui Huang.....	134
Adaptive Regularization Strategy for Solving Ill-conditioned Matrices via Zeroing Neural Network	
Chenyang Shi	139
EmoAgent: A Dual-Agent Framework for Short Text Emotion Classification based on Retrieval-Augmented Generation and Chain-of-Thought Reasoning	
Zixiang Qi	144
Memory Continuity as a Foundation of User Trust in Emotional AI Avatars: A Literature Review	
Tianyu Zhang.....	150
AI-Based Emotion State Monitoring: Methods, Applications, and Limitations	
Chen Ziqi.....	158
Research Review on Flexible Manipulator Picking Based on Machine Vision	
Li Shen	165
Visual World Models in Embodied Intelligence: A Study on Physical Commonsense Embedding and Active Perception	
Zhang Chen	174
A Review of High-Latency Optimization in Privacy-Preserving Computation: Hardware-Algorithm Co-Design, Hierarchical Protection, and Scenario-Aware Deployment	
He Wang	182
A Comparison of Hardware Side-Channel Countermeasures: Quantitative Analysis of Area Efficiency and Implementation Trade-offs	
Xihong Wang.....	197
Application of Reinforcement Learning in Robotic CNC Path Optimization	
Hanqi Sun.....	208
In the Era of Artificial Intelligence: How the Transformer Model is Changing the Structure of AI Agents	
Hao Yang	213

Decoding Pathway Selection for Resource-Constrained Brain-Computer Interfaces: A Systematic Trade-off between Conventional Feature Engineering and Lightweight Deep Learning	
Jiayi Zheng	219
Selecting Probability Calibrators for Tabular Classification	
Haojie Li	229
Analysis of Optimization Approaches for the Game-Theoretic Matchmaking Queue Model in League of Legends	
Jiayang Ao	237
Lightweight Attention-Related Mechanisms and Collaborative Design Strategies for Small Traffic Sign Detection: A Structured Review	
Xinyue Xu	243
A Review of Multimodal Identity Reconstruction Techniques in Face Image Translation	
Ding Cuiniu	251
Progress in Application of Big Data Analytics Technology in E-Commerce Precision Marketing	
Qixiang Sun	259