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(57) Abstract :
 In today's data-driven world, the need for secure and efficient data storage and retrieval mechanisms is paramount. This paper introduces a novel cloud-based framework designed to address these critical requirements. Leveraging the scalability and flexibility of cloud computing, our framework offers a comprehensive solution that ensures data security, reliability, and accessibility while optimizing performance and resource utilization. At its core, the framework employs a multi-layered security model encompassing encryption, access control, and authentication mechanisms to safeguard sensitive data against unauthorized access and cyber threats. Furthermore, it integrates advanced encryption techniques such as homomorphic encryption and differential privacy to preserve data confidentiality and privacy, even in shared environments. To enhance data availability and resilience, the framework utilizes distributed storage architectures and replication strategies, ensuring redundancy and fault tolerance. Additionally, intelligent data placement algorithms dynamically allocate resources based on access patterns and performance requirements, optimizing data retrieval latency and throughput.

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