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(57) Abstract :

The invention discloses a cloud-supported system for secure multi-party data computation comprising participating party nodes (101, 102, 103), an encryption module (301), a secure computation layer (201), a federated model aggregator (401), and a cloud orchestration engine (501). The system enables organizations to collaboratively compute on encrypted datasets without exposing raw information. By combining cryptographic protocols, federated learning, and secure enclaves, the invention ensures confidentiality, scalability, and compliance with global regulations. The modular design provides adaptability for real-world deployment across industries requiring privacy-preserving analytics.

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