Algorithm offers encryption boost for cross-border e-commerce

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Writing in the *International Journal of Networking and Virtual Organisations*, a team from China has revealed a novel approach to boost privacy for cross-border e-commerce users. Na Wang, Feng Gao, and Ji Zhang of Changchun University of Architecture and Civil Engineering in Changchun introduce an encryption algorithm based on social network analysis. The new approach could help users remain secure when transferring sensitive information during international transactions.

The team has used a multi-faceted strategy. Initially, they used a logical

inference mapping method for blockchain to encode both public and private keys with asymmetric encryption. Next, the social network analysis method reorganizes the user's social network structure using arithmetic coding and homomorphic encryption.

Social network analysis can be used to study social structures and relationships among entities whether these are individuals, organizations, or any other units with connections or interactions. Such an analysis focuses on mapping and measuring the various relationships to understand the patterns within the network. This approach allowed the streamlining of the user information fusion processing and the optimization of the encryption tool.

The team carried out simulations to highlight their method's anti-attack capabilities and efficiency in terms of how little time is required for the encryption process. The team's work thus introduces an optimized privacy protection model for cross-border e-commerce users, incorporating encryption and optimized encoding designs through grouping information reorganization and chaotic sequence control, the team reports. A notable feature is that the adoption of dual keys improves the system still further while simplifying key construction and optimizing the design of the encryption algorithm.

The researchers explain that the implementation of this encryption approach could be used for internal data protection and cross-border payment security within enterprises. It is important to have strong data security and confidentiality in these areas. The next step is to explore and test the system in real-time settings.

More information: Na Wang et al, Privacy information encryption for cross-border e-commerce users based on social network analysis, *International Journal of Networking and Virtual Organisations* (2024). DOI: 10.1504/IJNVO.2023.135961

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