

# Matsuura Lab.

## [Score Level Indexing and Fusion in Biometric Identification]

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Research results on information security and cryptography are on display.

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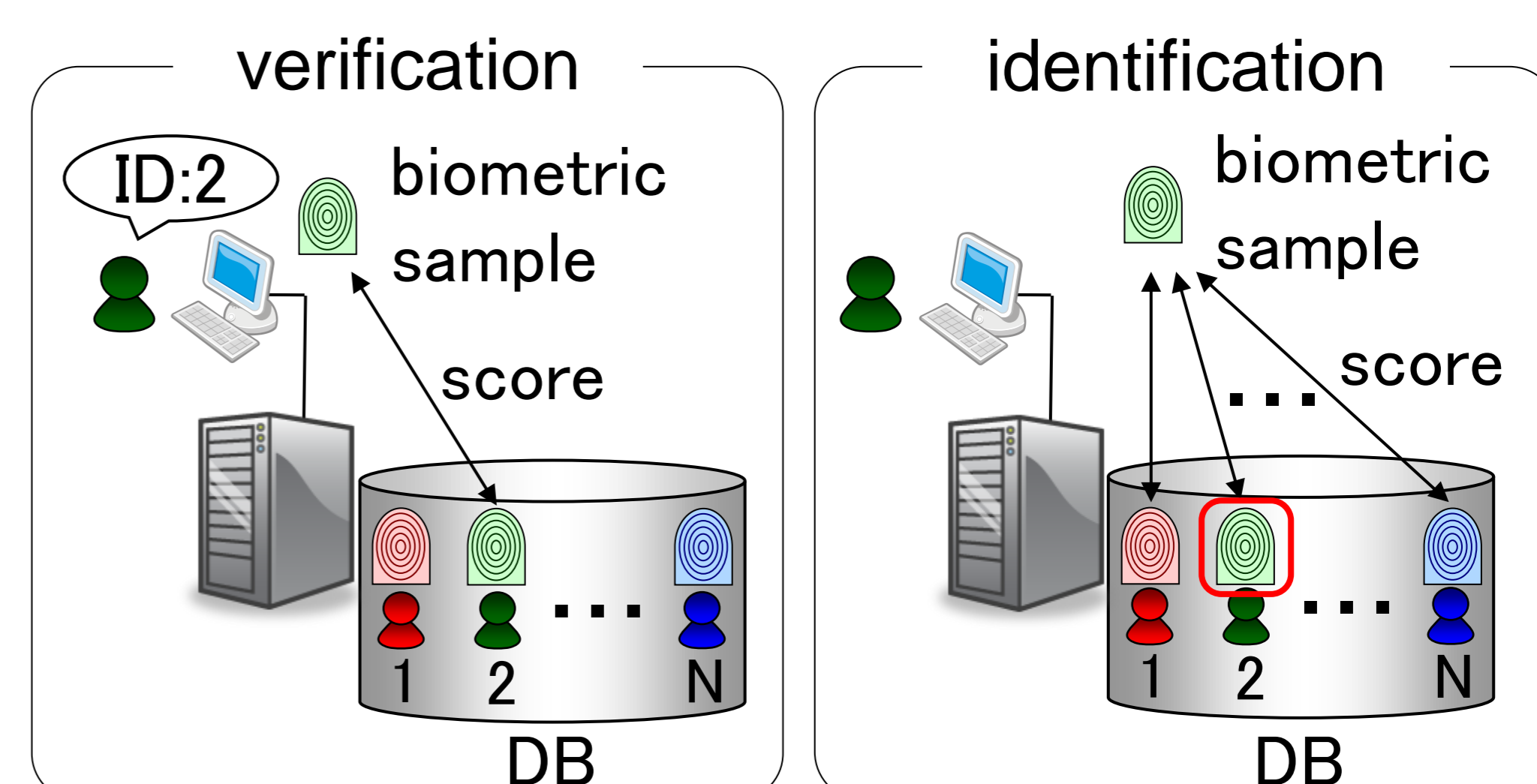
**Information Security**

### Biometric Identification



Biometric identification systems, which identify users based only on their biometric sample, has lately attracted attention because of the convenience: they do not require a user ID nor a smart card.

However, in biometric identification, both the identification error rates and the one-to-many matching time increase as the number of enrollees increases. Thus, when we apply biometric identification to the large scale applications, we need to solve the problems with the accuracy and the response time.



### Score Level Indexing and Fusion in Biometric Identification

To solve the above problems, we proposed a scheme which improves the accuracy and the response time only using scores as information sources. The feature of our scheme is the versatility: our scheme can be applied to any kind of biometric system that outputs scores.

To improve the response time, our scheme uses metric space indexing which reduces the number of objects to be compared at query time only using distances between objects. To improve the accuracy, our scheme uses score level fusion which combines multiple scores obtained from multiple biometric samples of the user. To minimize the retrieval error rate and the identification error rate, our scheme calculates, for each enrollee, the posterior probability of being identical to the user, and performs searching and fusion based on the posterior probability.

