Large Scale Biometrics Identification: Issues and Challenges

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As more and more civil applications require reliable and accurate citizen identification, lawmakers rely on biometrics as a useful tool in building identification services. In this talk, we briefly review algorithms used in fingerprint identification in particular. Contrary to the common belief that fingerprint identification is a solved problem, we will show that there are several research issues in building a large scale fingerprint identification system. The impact of the biometrics system errors on the workload and efficacy of the overall system will be demonstrated. The challenges for large-scale biometrics identification are significant both in terms of improving accuracy and response time. The current performance of the identification algorithms need to be significantly improved to successfully handle millions of persons in the biometrics database matching thousands of transactions per day. Current large scale biometrics identification techniques will require a fresh approach in designing systems that can handle such work loads and very large populations. An often ignored important aspect of large scale biometrics system deals with the issue of citizen privacy. The uniqueness of biometrics can be a liability in protecting citizen privacy. IBM Research has proposed “cancelable biometrics” to the industry to enhance privacy in biometrics systems. The design principles behind cancelable biometrics will be presented along with recent results.

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