

Analyzing the performance and risks of biometrics systems using Comprehensive Biometrics Evaluation Toolkit (C-BET)*

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Extended abstract

As a result of large scale evaluation that are conducted to analyze the performance of the biometric systems, millions of scores are obtained by comparing large numbers of genuine and imposter data. Traditionally these scores are used to generate detection error tradeoff (DET/ROC) and/or Cumulative Match Characteristic ranking (CMS) curves, which are then used to visually compare systems to one another [1-4]. These curves alone however do not provide a complete knowledge about the system. Particularly, they do not allow to analyze the risk of biometrics systems due to non-confident matches, nor allow they to fine-tune the system with respect to the factors that affect system robustness.

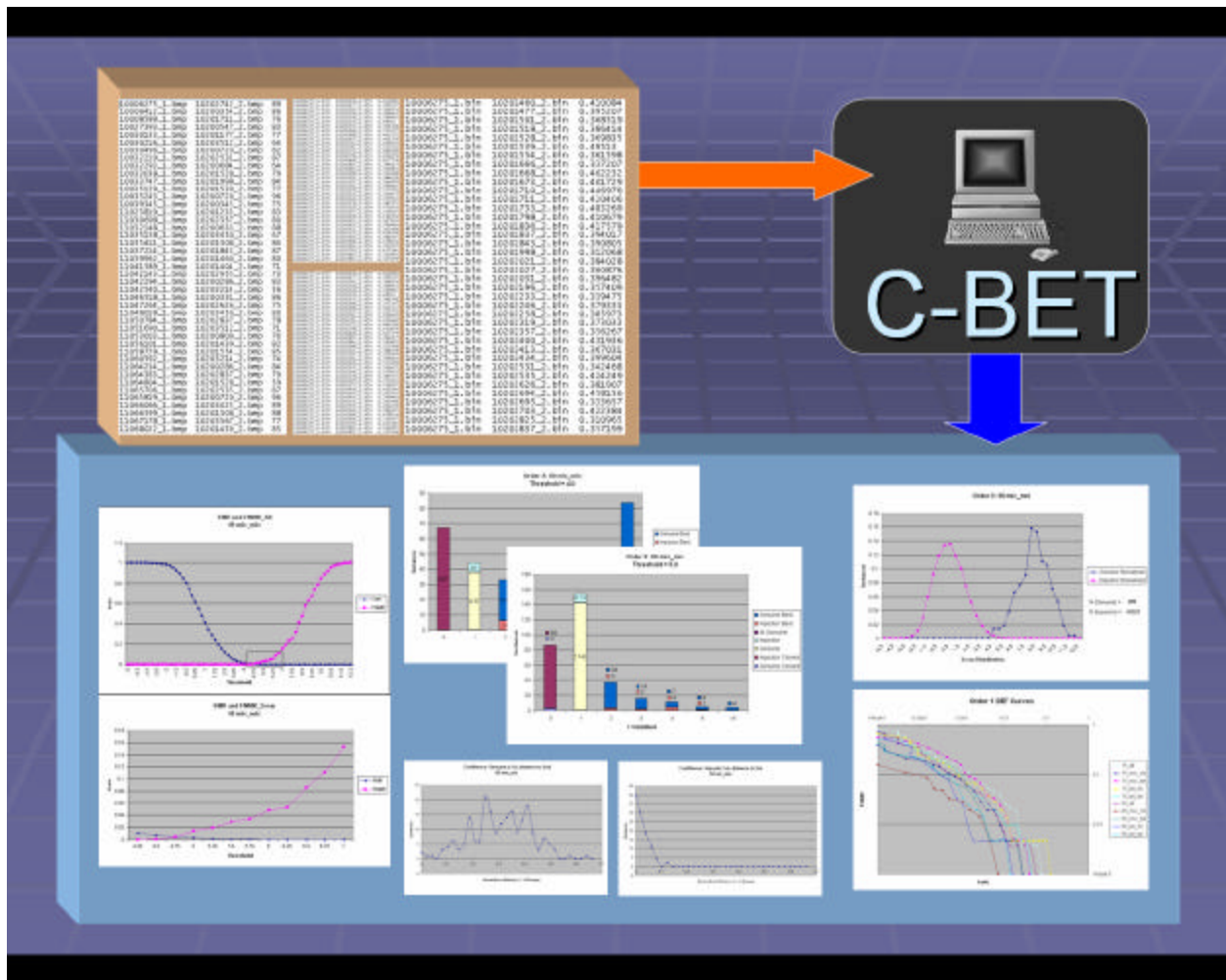
In order to provide a complete picture of the biometric system performance, Scientific and Engineering Directorate of the Canada Border Services Agency has developed the Comprehensive Biometrics Evaluation Toolkit (C-BET). Based on the concept of multi-order score analysis introduced in [5,6] and the recently introduced concept of the threshold validation [7,8], C-BET is implemented as a JAVA program that takes all scores obtained through a large-scale evaluation to instantaneously generate multi-sheet MS EXCEL files containing easy to browse and analyze graphs related to the system performance.

As such, the program allows one to efficiently compare biometrics systems to one another and quickly investigate the affect of different parameters, such as the match threshold, on the system performance, by visually comparing images to one another (See Figure below).

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