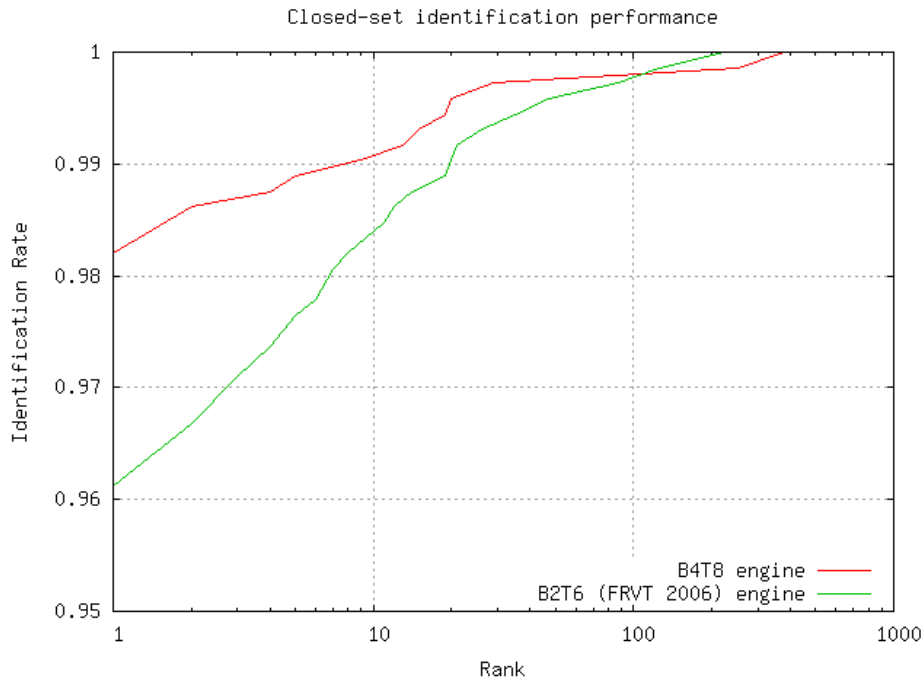


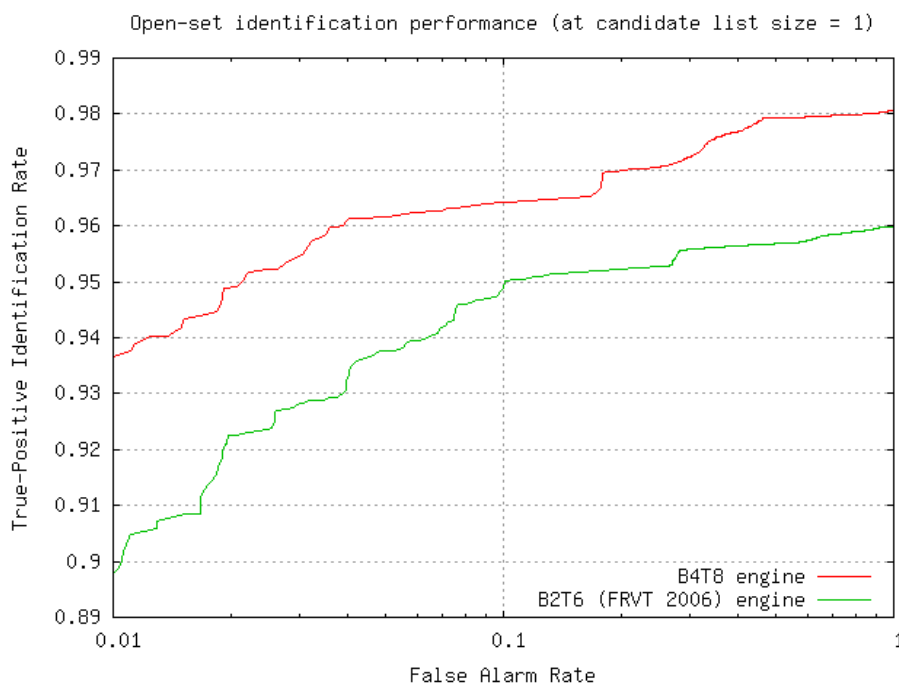


## B4T8 Algorithm Performance

The three diagrams show the performance of the current B4T8 and for reference the B2T6 engine – which was used in the Face Recognition Vendor Test 2006 – in the closed-set identification, the open-set identification and the verification scenario.



The cumulative match characteristic curves show for example that the rank 1 identification rate has increased from 96% to more than 98% for B4T8 compared to the algorithm used for FRVT2006.

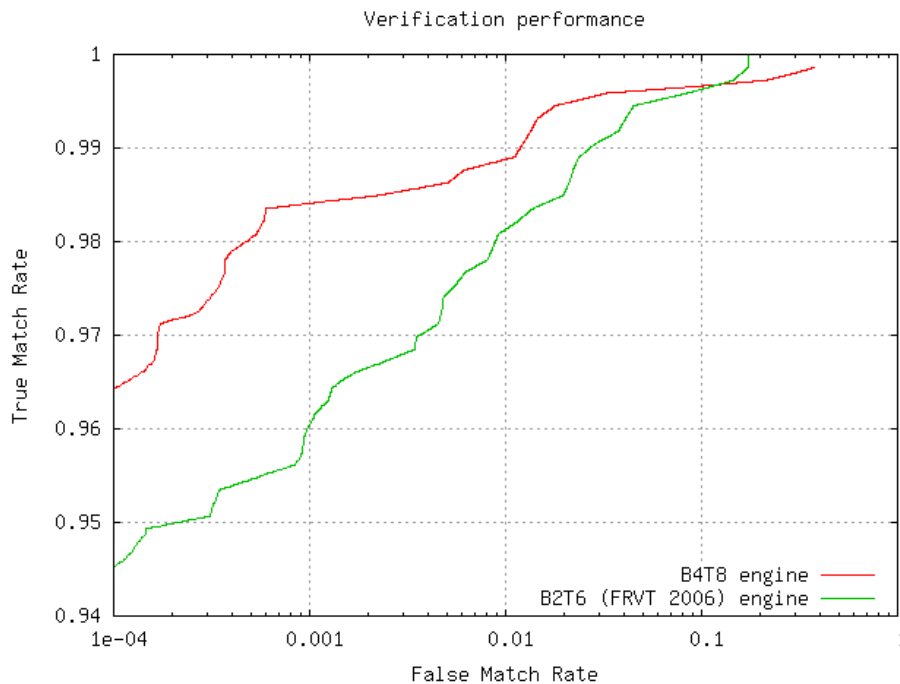


Open-set identification performance curves reflect application scenarios in passport/visa issuing or driver's license issuing.

At a typical false alarm rate of 2%, the true positive identification rate has increased to 95%.



## B4T8 Algorithm Performance



The ROC curve reports on the biometric performance in verification applications as they are typical for access control.

Current B4T8 algorithm delivers a True Match Rate of more than 98% at a typical False Match Rate of 0.1%.

All measurements were done using those two subsets of the grayscale FERET database that constitute the so-called Duplicate I test: a gallery including 1196 images of 1181 persons (for a few persons, two images are enrolled in the gallery) and a probe set of 722 images of 242 persons. The main characteristic of this test is that the probe images and the corresponding gallery image(s) were taken in different sessions of the FERET image collection process. All images show the face in a frontal or nearly frontal pose and were taken in a setting typical for passport photographs. The average resolution of the images is low as the average distance between the eye centers is only 65 pixels. Regarding the age differences between the images, here is a quote from the FERET DB documentation on this test:

"The Duplicate I probe set holds 722 images whose matches were taken between 0 and 1031 days after the match. The median is 72 days and the mean is 251 days." Between gallery and probe set, the images of a person display differences in various aspects such as illumination, facial expression, wearing of glasses, pose (slightly), age (up to 34 months), or resolution of the face within the image. The demographic characteristics of the image subsets seem not to be disclosed. Visual inspection of the images revealed that they cover an age range of at least between 20 and 60 years and that various ethnicities occur in the following proportions: 9% Black (i.e. Afro-American and native Australian), 12% Asian (i.e. East and Southeast Asian) and 79% White (i.e. all other ethnicities).

For more information on the FERET tests, see the articles listed below.

#### Acknowledgement:

The research in this paper uses the FERET database of facial images collected under the FERET program [6].

#### References:

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