IREX IV

Large Scale Evaluation of Iris Identification Systems

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March 8th, 2012

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NIST National Institute of Standards and Technology

The Iris Exchange (IREX) Program

Purpose:

- IREX was initiated to support an expanded marketplace of iris-based applications based on standardized interoperable iris imagery.

Prior Activities

- **IREX I:** Investigated standard image formats for the exchange of iris data.
- **IREX II - IQCE:** Evaluated the accuracy of automated quality assessment algorithms.
- **IREX III:** Large-scale Evaluation of iris identification algorithms.

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IREX IV

Purpose:

- Large scale identification test (like IREX III).

Differences from IREX III:

- New dataset with uncompressed iris samples.
- We plan to investigate optimal JPEG 2000 Compression Parameters.
- Participants will be requested to submit algorithms that attempt to minimize a cost function.

Cost Model

In an identification mode, DET curves show the trade-off between two types of errors: false positives, and false negatives.

A cost function assigns fixed weights to each type of error:

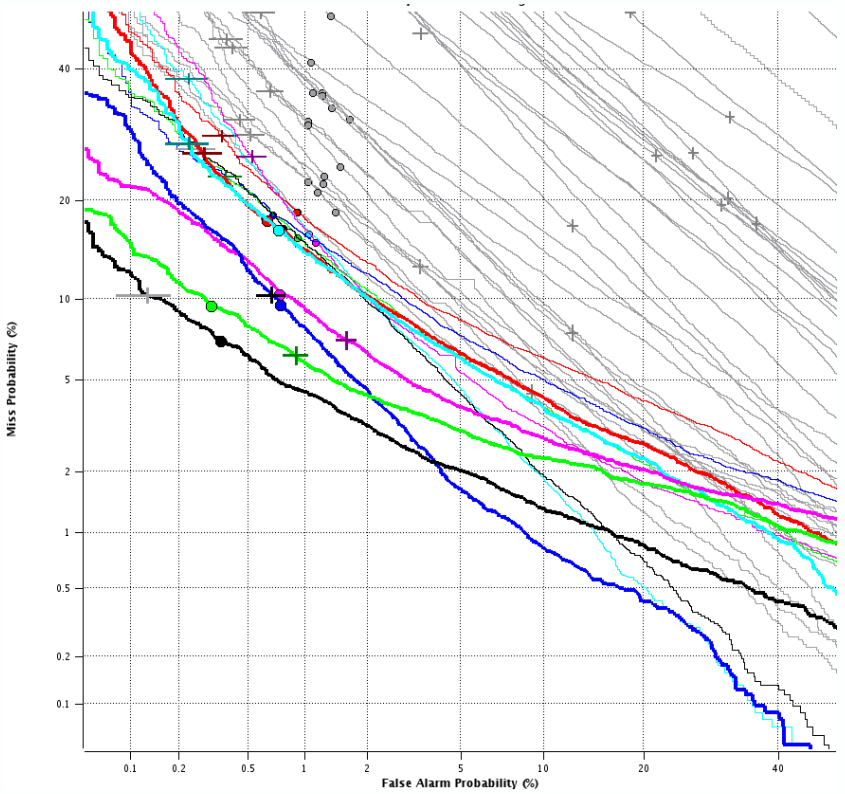
$$\text{Total Cost} = P_{enrolled} \cdot FNIR \cdot C_{FN} + (1 - P_{enrolled}) \cdot FPIR \cdot \text{Cost}_{FP}$$

$P_{enrolled}$ - *a priori* probability that the subject is enrolled
C_{FN} - cost of a false negative
C_{FN} - cost of a false positive

Cost Function Parameter values are chosen to be representative of a possible application.

Usage in Speech Recognition

The NIST Speech Group specifies cost parameters for every evaluation.



2008 Speaker Recognition Evaluation:

Cost of a Miss:	10
Cost of a False Match:	1
Probability of mate:	0.01

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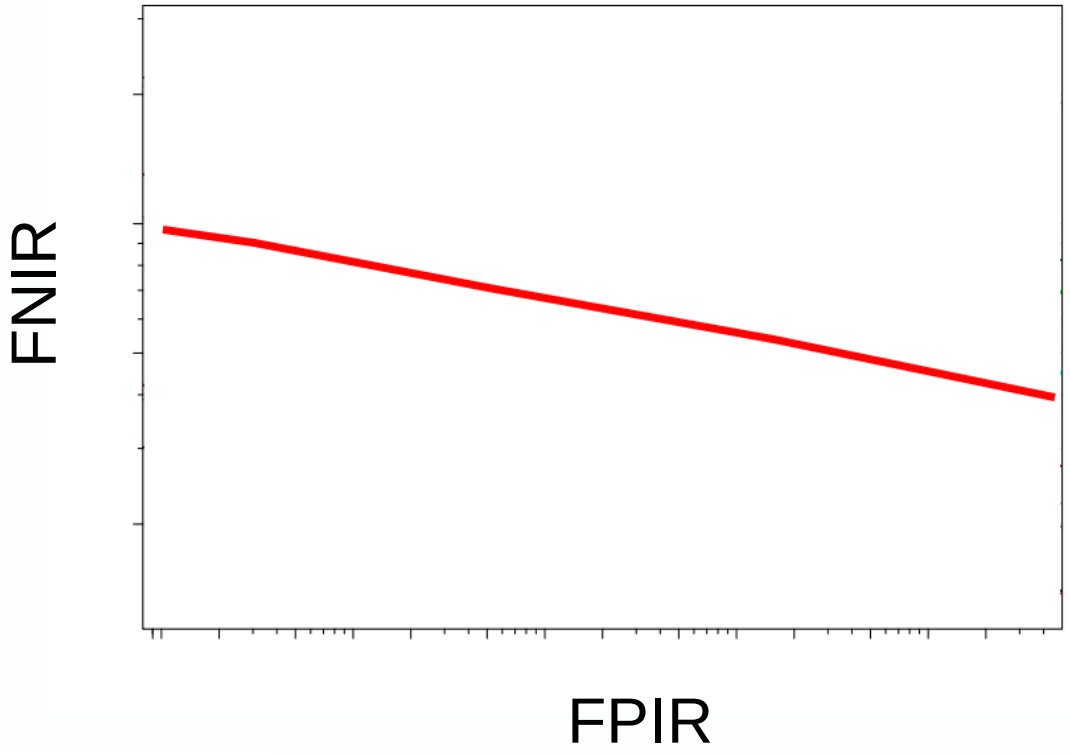
Motivation for Cost Model in IREX IV

It has been claimed that iris software developers have the ability to “change the shape” of the DET curve.



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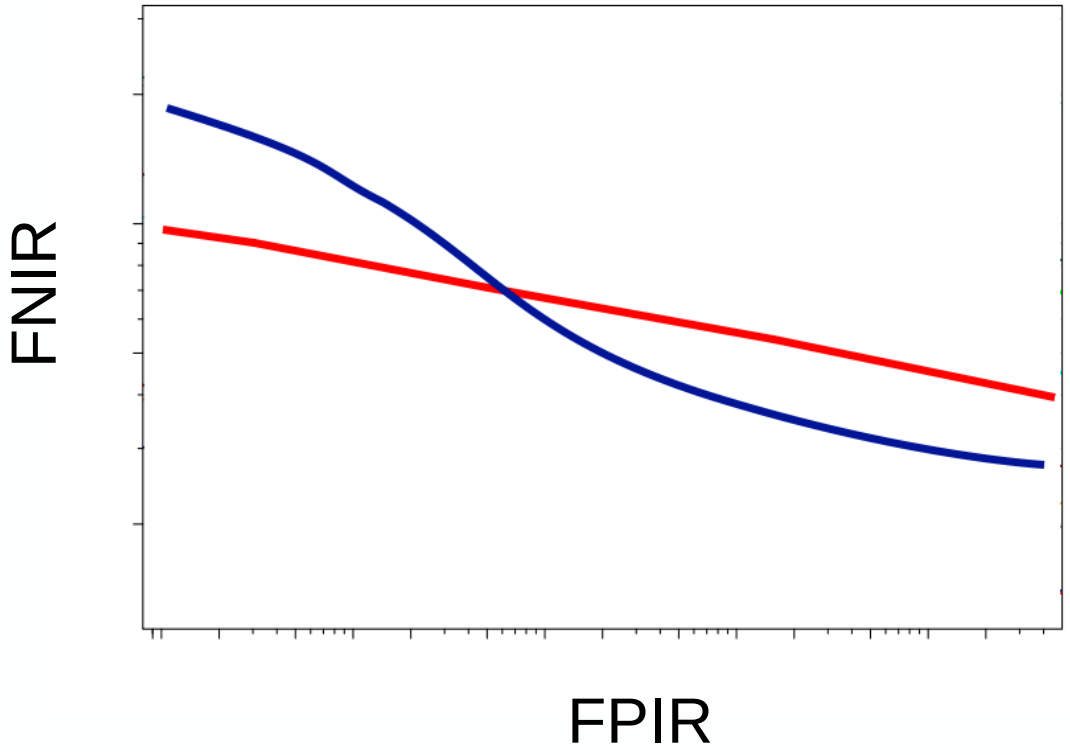

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What else?

The evaluation is open to anyone academic institution and commercial organization wishing to participate.

Expect an official announcement on the IREX homepage shortly:

http://www.nist.gov/itl/iad/ig/irex.cfm

Timeline:

- The API and CONOPS will be posted later this month.
- We expect to receive SDK submissions in April.
- A public report on cost models and initial compresson results by the end of July.
- A report on JPEG 2000 compression profiles later this year.

Thank You

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