

# IREX IV

## Large Scale Evaluation of Iris Identification Systems

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# 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.

# 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:

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

$P_{\text{enrolled}}$  - *a priori* probability that the subject is enrolled

$C_{\text{FN}}$  - cost of a false negative

$C_{\text{FP}}$  - cost of a false positive

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

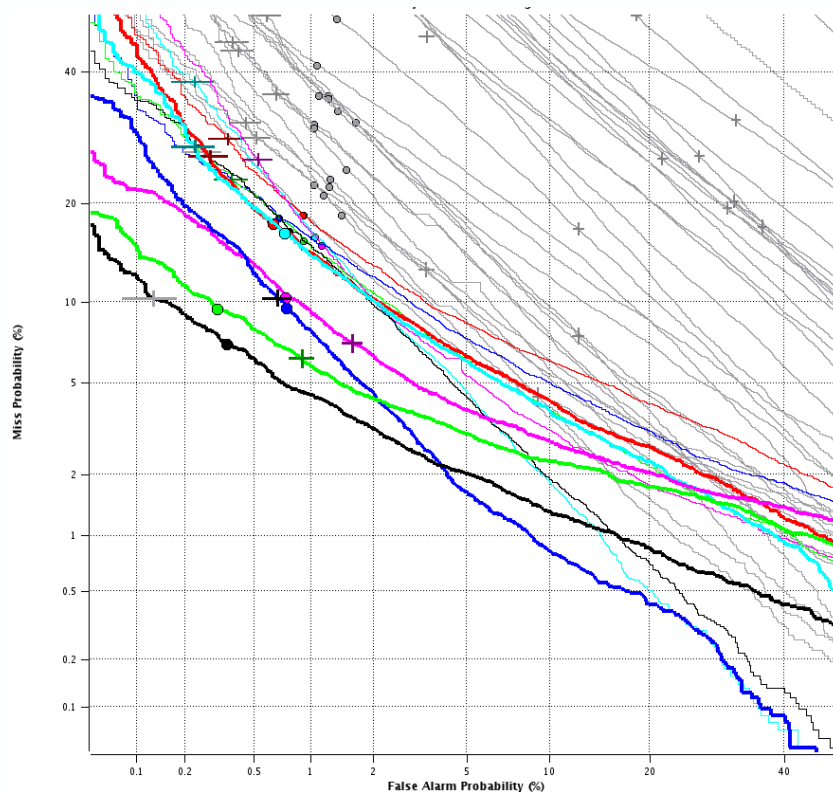
# Usage in Speech Recognition

The NIST Speech Group specifies cost parameters for every evaluation.

2008 Speaker  
Recognition Evaluation:

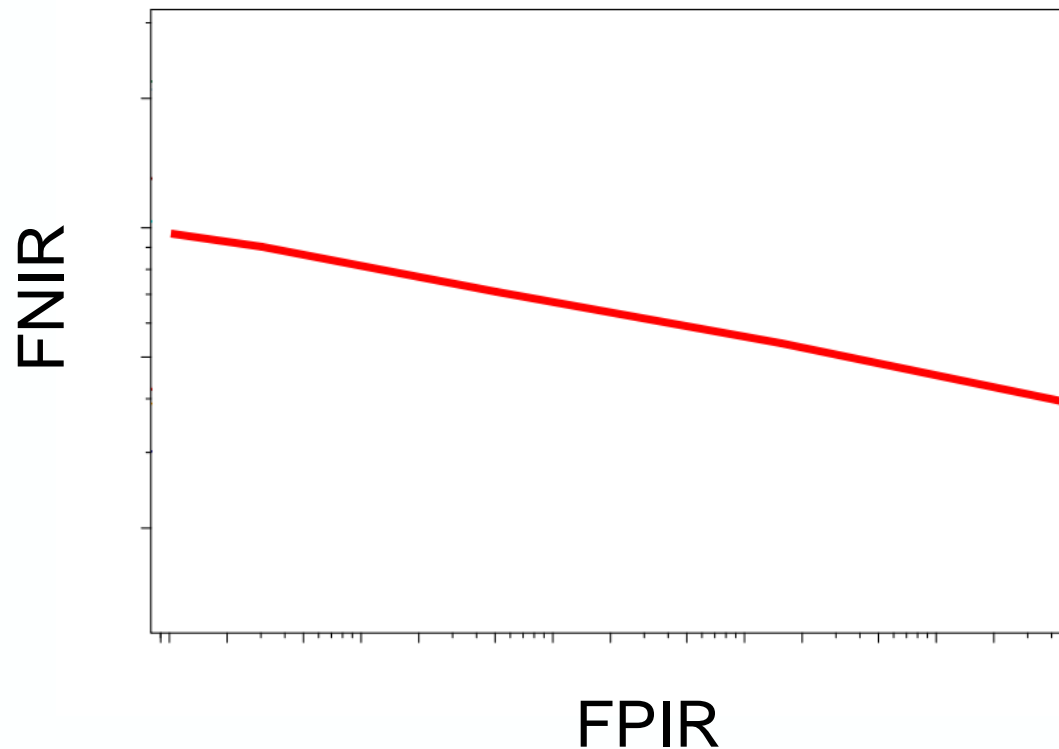
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|                        |      |
|------------------------|------|
| Cost of a Miss:        | 10   |
| Cost of a False Match: | 1    |
| Probability of mate:   | 0.01 |



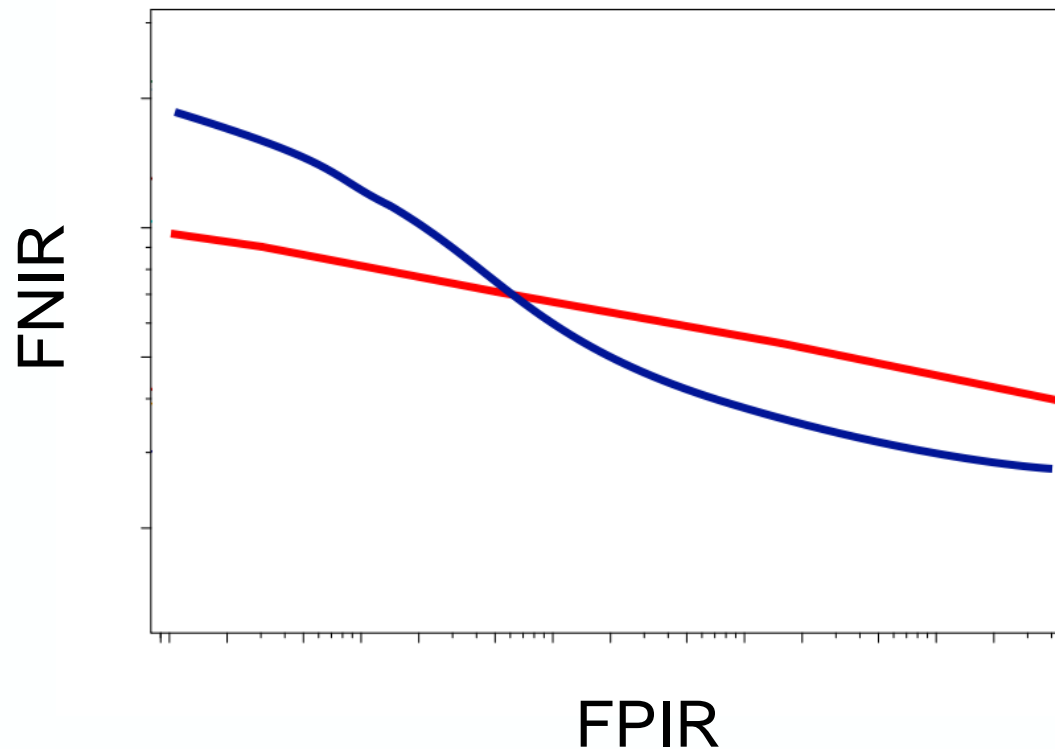
# Motivation for Cost Model in IREX IV

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



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# 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 compression results by the end of July.
- A report on JPEG 2000 compression profiles later this year.



# Thank You

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

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