

Voice and Speech Tools for Corrections

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About JMC

J. Markowitz, Consultants

Founded in 1990 and has its offices in Chicago

The leading industry analyst in voice-based biometrics

Leading analyst in speech processing

Provides strategic market and technical analyses based upon more than 20 years of experience.

Clients range from entrepreneurs to multi-nationals

Clients include Motorola, IBM, US SBA, Bell Canada, Novell, Morgenthaler Ventures, STS International

Topics

Background

Voice biometrics

Speech recognition

Applications

Community corrections

Inmate corrections

Background

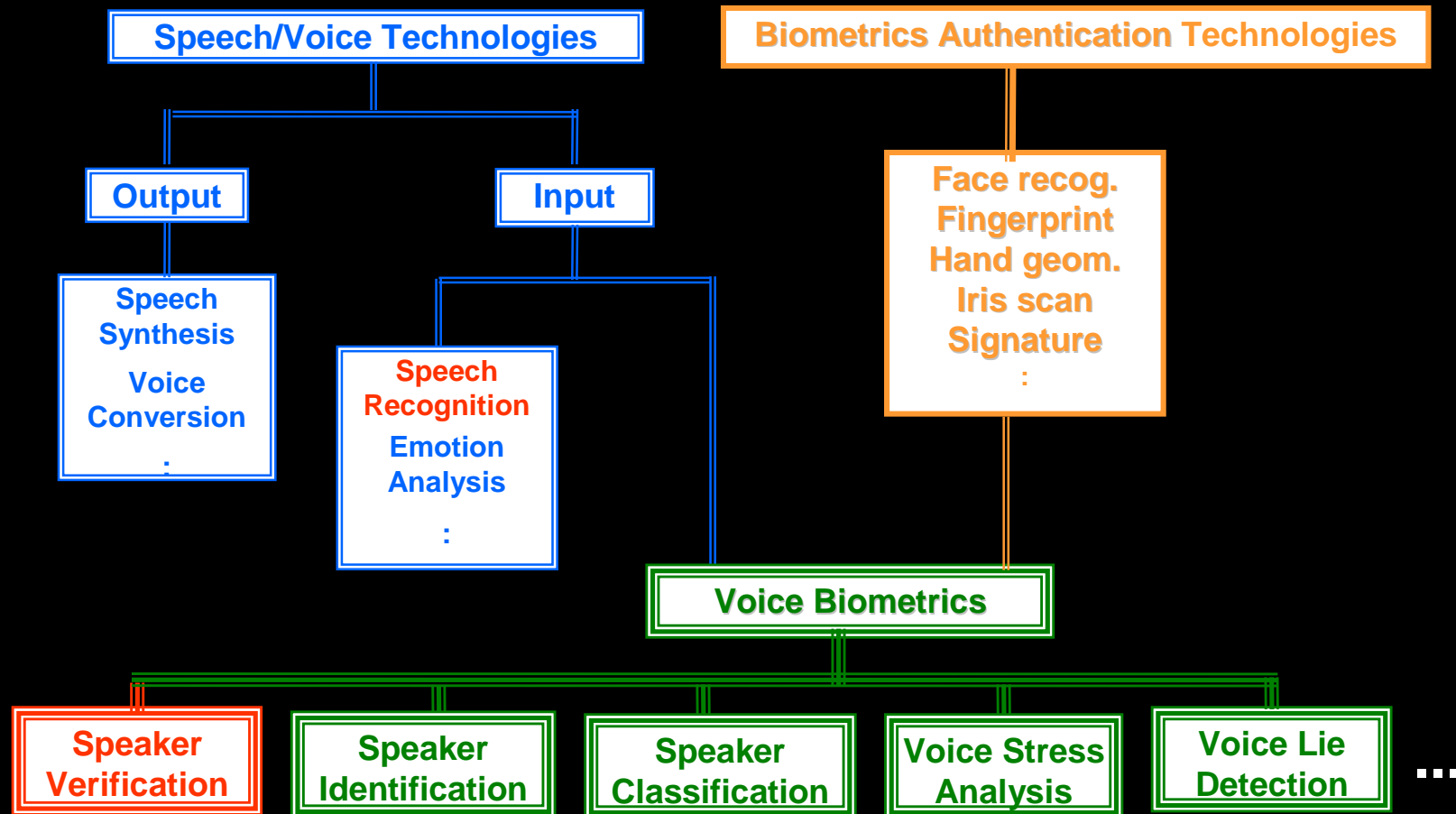
Voice biometrics

Technologies for finding out something about the speaker

Speech recognition

Non-biometric technology for finding out what a speaker is saying

The Speech and Speaker Family Tree



How Speech Recognition Works

Speech Recognition

Human-machine interface

Identifies words & phrases

List of choices OR Statistics



How Speaker Verification Works

Password — Text Dependent



What you know + Who you are

Text Independent — Free Form



Unobtrusive

Text Prompted — Challenge-Response



Resists Tape Recorders

FAQ: Can they resist tape recorders?



Liveness / Anti-spoofing

Resists Tape Recorders

I had a couple of people call the system and try to use my pass phrase -- one male, one female. Neither could get in.

Then, I tape recorded myself saying my pass phrase as I gained access to the system. I could gain access while I was doing the recording -- but when I played it back to the system, no dice. Its polite-but-firm response: “Hmm, that didn't sound like you.”

Scott Kirsner Boston Globe April 7, 2003 p C15

FAQ: What about twins and mimics?



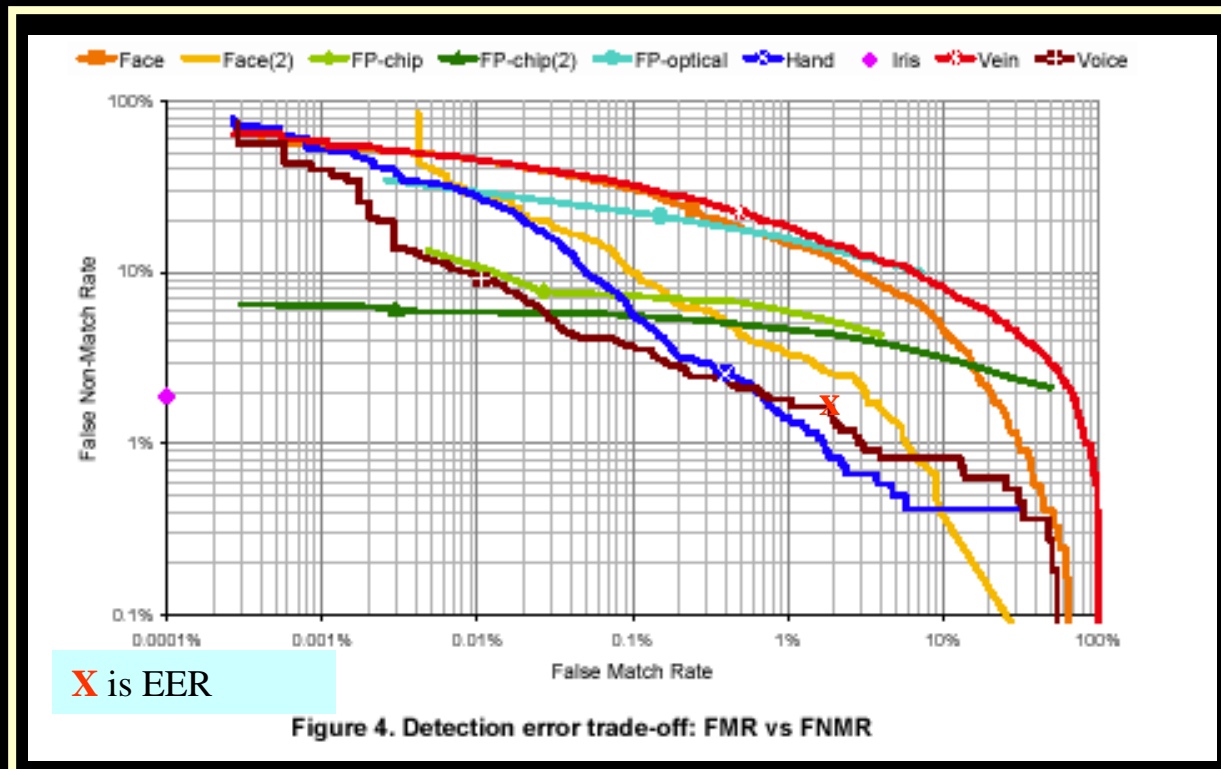
The Evil Twin

FAQ: How accurate are they?

Speaker authentication
and other biometrics
are much *better than*
PINs and Passwords

Decision/Matching Threshold

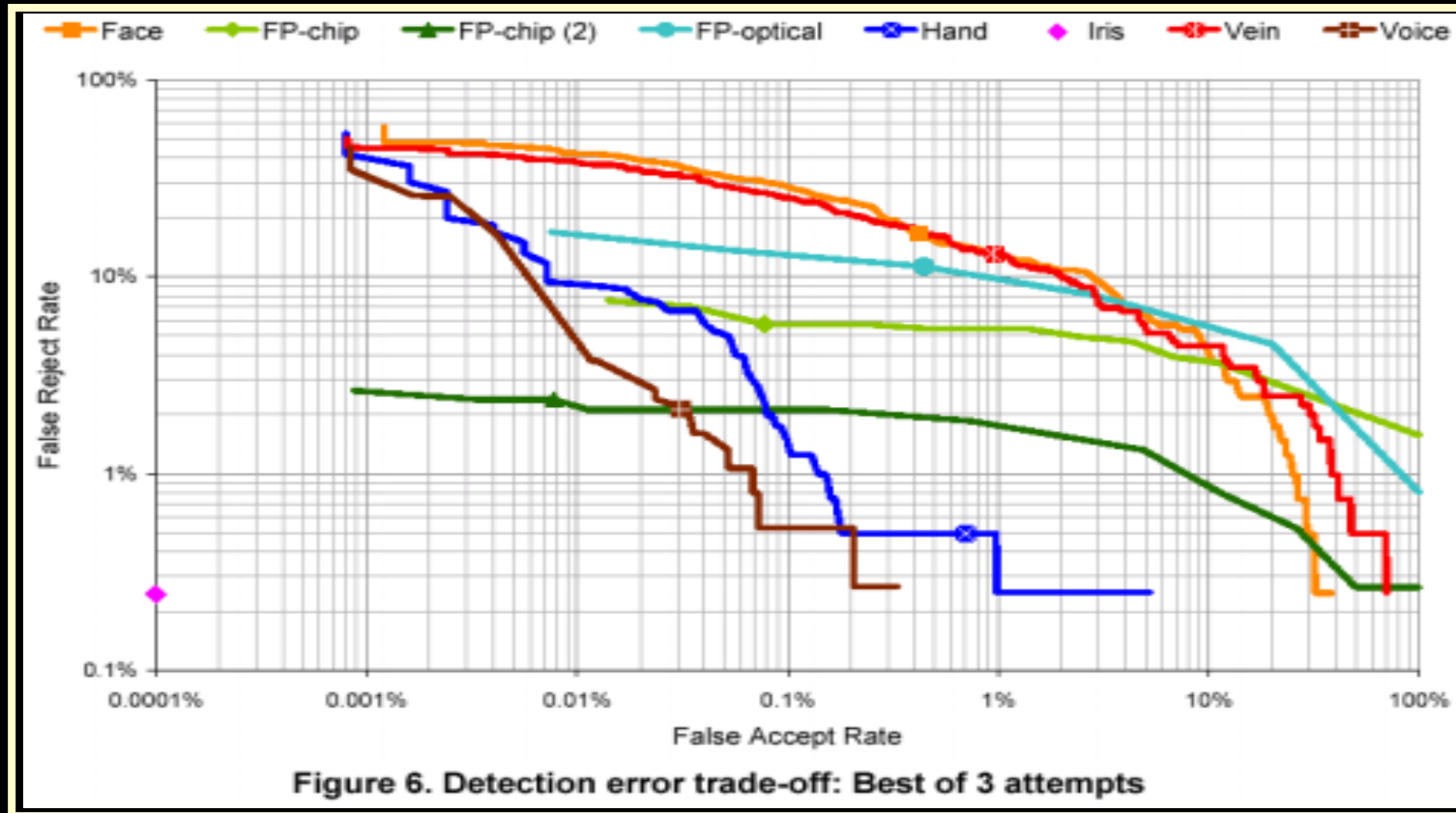
From CESG Biometric Test Programme Report (www.cesg.gov.uk/biometrics/)



Biometrics Product Testing - Final Report (March 2001)
Centre for Mathematics & Scientific Computing
National Physical Laboratory United Kingdom

Comparison with other Biometrics

From CESG Biometric Test Programme Report (www.cesg.gov.uk/biometrics/)



Centre for Mathematics & Scientific Computing
National Physical Laboratory United Kingdom

Input Device and Accuracy

Speaker verification is designed to use standard input devices

This is unique in biometrics industry

Can be deployed widely

Costs are lower

Cross-device mismatch still a problem

Applications for Community Corrections

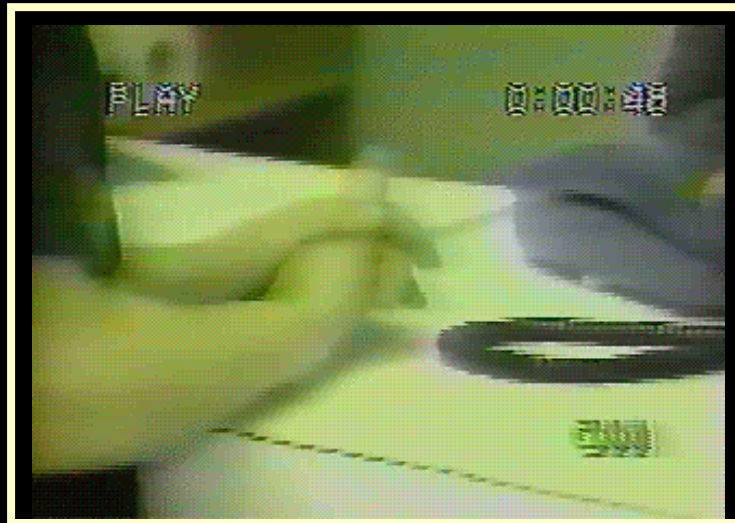
Applications for Community Corrections

Home incarceration
Reporting in
Tracking
Alcohol/breathalyzer
Juveniles

Applications for Community Corrections

Speaker verification with speech recognition support

Home Incarceration



System calls – random schedule

Text-prompted verification

***Message delivery**

***Internet**

***Checks for third-party calls, etc.**

***Callback upon failure**

Reporting In



**Offender calls – per schedule
ANI – approved phone/location
Text-prompted verification
*noise handling**

Tracking



**System pages – timed call-back
Text-prompted verification
*Message delivery
ANI**

Breathalyzer



**Scheduled test
Text-prompted verification
breathalyzer test**

Juveniles

Judge William Dupont

Iberville Parish

Applications for Inmate Corrections

Applications for Inmate Corrections

Outbound calling
Call monitoring

Outbound Calling



Password based

Call Monitoring

Record call content

Audio mining of content

Analyze for suspicious words and patterns

In Conculsion

Who is the best vendor?

It depends

Thank you!

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