FIGHTING CRIME WITH FACIAL RECOGNITION

SEE THE TECHNOLOGY HELPING LAW ENFORCEMENT AGENCIES BRING CRIMINALS TO JUSTICE.

1. IMAGE CAPTURE

IDEAL SOURCES: CONTROLLED ENVIRONMENTS

- Motor vehicle agencies
- Visa & passport agencies
- Mugshots
- Background checks
- Surveillance cameras placed at "choke points"

LESS-THAN-IDEAL SOURCES: UNCONTROLLED ENVIRONMENTS

- Consumer cameras and smartphones
- Standard security cameras
- Photos posted online

AIMING FOR THE IDEAL

EFFECTIVE RESOLUTION
- Resolution
- Artifacts
- Motion blur
- Compression

ANGLE & OBSTRUCTIONS
Side, rear, or top views •
Hats •
Sunglasses •

UNDER/OVER EXPOSURE

2. PROCESSING

Software calculates measurements of facial features and compares results to available stored images. Image enhancements compensate for off-angle images, over/under exposure, interlacing, and image resolution.

Enhancements

Measurement

Comparison

PEOPLE AND COMPUTERS WORKING TOGETHER

3. COMPUTER MATCHING

A single computer can process 1–10+ million records

Search time from a fraction of a second up to 10 seconds

A set of potential matches are ranked in order of algorithmic similarity

GOOD AT	SHORTCOMINGS
Comparing millions of records in seconds	
Producing a short list of candidates	Low quality imagery due to poor resolution, illumination, and angles
Spotting attempts to alter appearances	
Maintaining objectivity	Not always able to factor for race, age, or gender
Adhering to privacy policies	

4. HUMAN REVIEW

A human examiner is often required to review a short list of candidates suggested by the computer

The human brain can quickly recognize or compare faces

A list of several hundred candidates can be reviewed in under 1 minute

GOOD AT	SHORTCOMINGS
Identifying people they know	Very limited number of known people
Recognizing glimpses or single features	Poor recognition beyond one's own ethnicity
	Biased
Considering other clues, such as clothing, location, race, age, and gender	Reviewing many photos can be time consuming and tiring

THE RESULT

AN EVER MORE USEFUL TOOL

- Dramatic increase in commercial algorithm accuracy
- Standardization of mugshot capture process across agencies, encouraging exchange
- More trained examiners who understand the process and can use sophisticated software
- Rise in social network users uploading photographs
- Improvements in CCTV and consumer cameras

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