Biometrics - Blessing or Curse?

Frankfurt, 14.6.2022

SVA System Vertrieb Alexander GMBH

A short company introduction

/ Profile and corporate objective

Biggest **owner-operated system integrator** in Germany

Steady growth with more than **2.300 employees** in Germany

Company **objectives**

We accompany our customers on a **long-term basis** throughout the project lifecycle.

/ Company

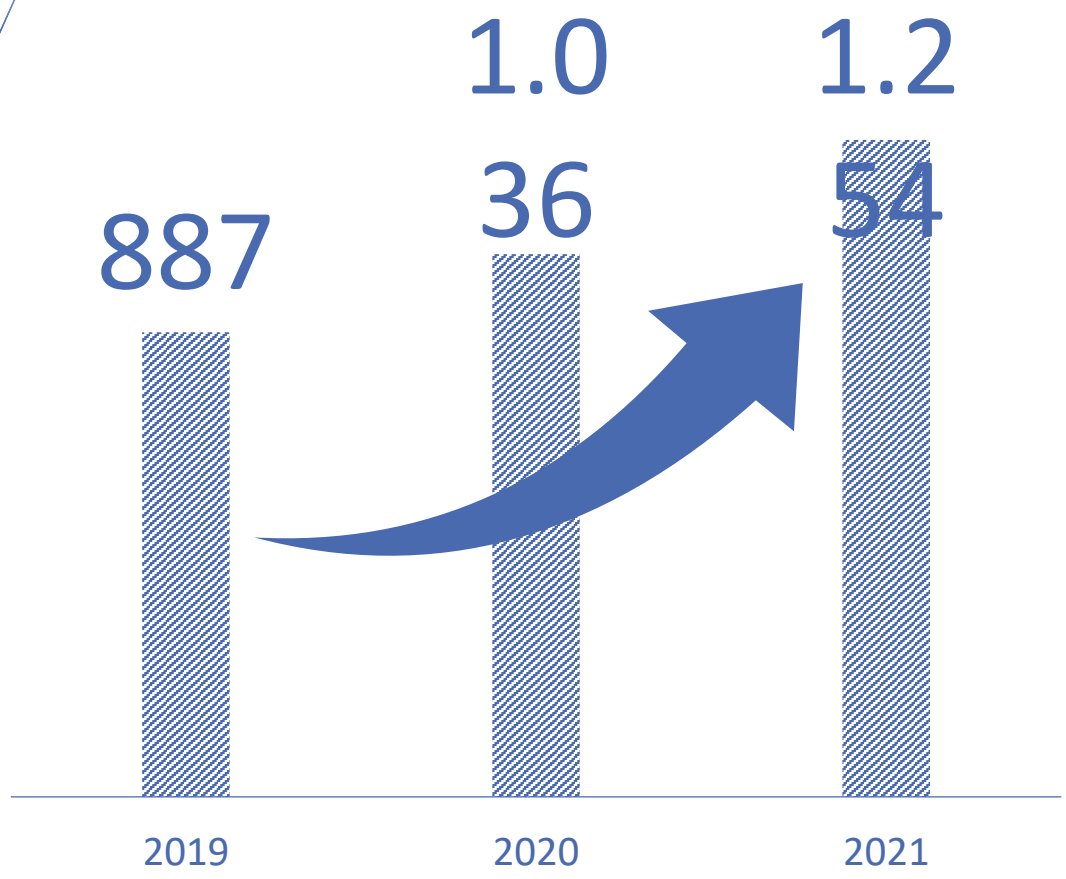
Employees

2.300
2021

1.500
2020

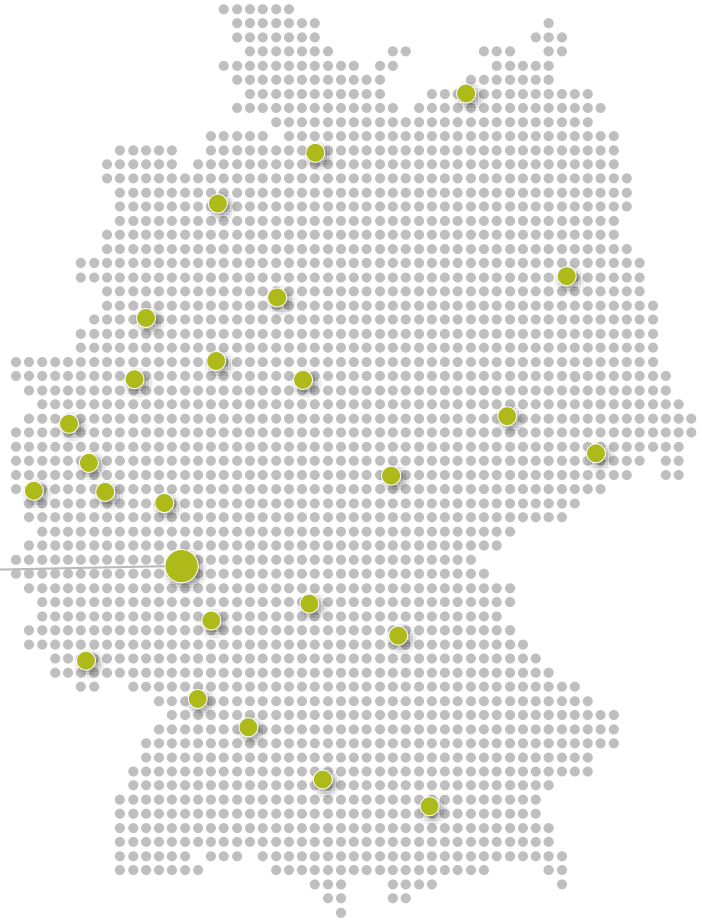
1.000
2019

Sales volume in Mio €



/ Company

26
Locations



6 TOP
Industries

Automotive

Retail

Public

Machine & Plant Construction

Finance & Insurance

Telecommu-nication

/ Product portfolio at a glance

Datacenter-Infrastructure

- Storage & Server Systems
- IP Networks Infrastructure
- Software Defined Data Center/Container
- Cloud & Automation
- Hyperconverged

Mainframe

- Services / Consulting
- zHosting
- zBusiness Services
- IBM System z Hardware
- Managed Services

End User Computing

- Application & Desktop (CAD/E) Virtualization
- Virtual Workspace & Mobility
- Application, Information & Device Management
- Unified Endpoint Management

Big Data Analytics & IoT

- Data Science & AI
- Operational & Security Analytics
- Business Intelligence
- Internet of Things
- Data Engineering & Microservices

SAP

- SAP Technologie
- SAP Solution Manager
- SAP Analytics
- SAP Security
- SAP Lizenzmanagement

Business Continuity

- Archiving
- Backup and Recovery
- Disaster Recovery
- High Availability
- Continuity Planning

Service Management

- Service Management
- Asset Management
- Engineering Lifecycle Management
- Process Digitization & Automation

IT Security

- Information Security & Compliance Consulting
- IT Security Architecture & -Integration
- Penetration Testing
- IT Security Managed Services
- Security Incident Response

Agile IT & Software Development

- DevOps & Agile Culture
- Software Development
- Infrastructure as Code & Configurations Management
- CI/CD Pipeline/Toolchain
- Container Platforms & Cloud Management

What makes us unique?

/ SVA ...

SYSTEMHAUS DES JAHRES 2021 PLATZ 1
IN DER UMSATZKLASSE ÜBER 1 MRD. €
SVA System Vertrieb Alexander GmbH
COMPUTERWOCHE ChannelPartner

2020 Bester MSP
MANAGED SERVICE PROVIDER
Platz 3
SVA System Vertrieb Alexander GmbH
ChannelPartner COMPUTERWOCHE

WirtschaftsWoche
BESTER Mittelstands Dienstleister
2022
SVA System Vertrieb Alexander GmbH
Im Branchenvergleich: 15 IT-Beratungen
Partner: ServiceValue GmbH
Ausgabe 11/2022

TOP ARBEITGEBER 2019
DIE FAMILIEN-FREUNDLICHSTEN UNTERNEHMEN DEUTSCHLANDS
kununu freundin

- Owner-operated
- High employee satisfaction and loyality
- Long-term technical support for solutions delivered by us
- Customer satisfaction and recommendation above average

/ Personal

Jürgen Kühn

Senior IT Security Consultant

Dipl.-Ing. Nachrichtentechnik UNI Duisburg

Identity and Access Management

Single Sign-On

Smartcards

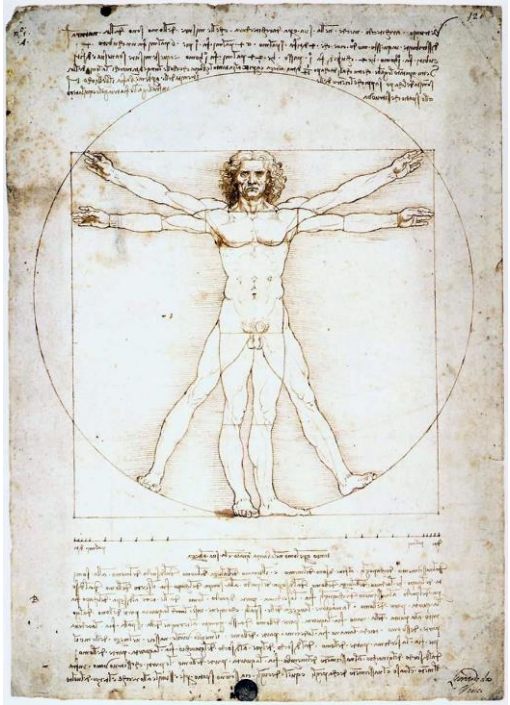
Biometrics

PKI

IT Security

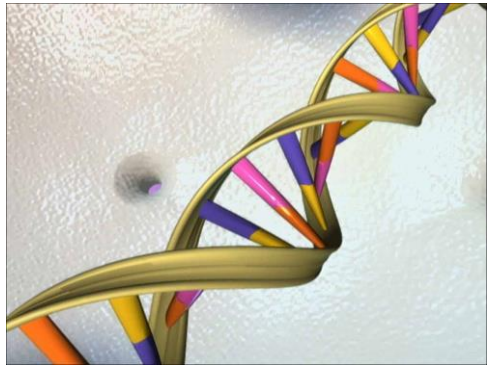
Database Security

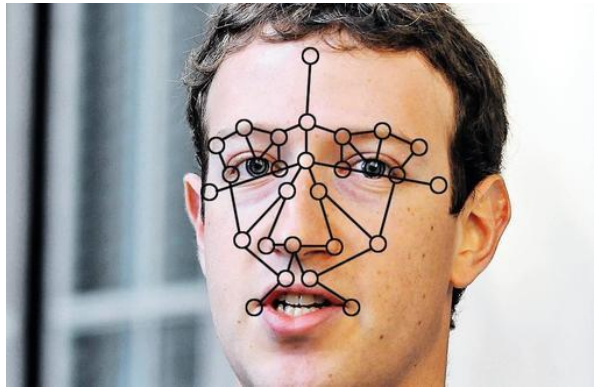
/ Agenda



- **Basics**
- Fingerprint
- Iris scan
- Face recognition
- Hazards
- Discussion

/ Biometrics in everyday life





/ What is Biometrics

- "Science of counting and [body] measurements on living organisms «
- From Greek
  - Bios = Life
  - Métron = Measure
- Biometrics is a technique for identification and authentication of persons based on specific physiological or behavioral characteristics

Source: DUDEN - Das große Fremdwörterbuch

/ Features of biometric characteristics

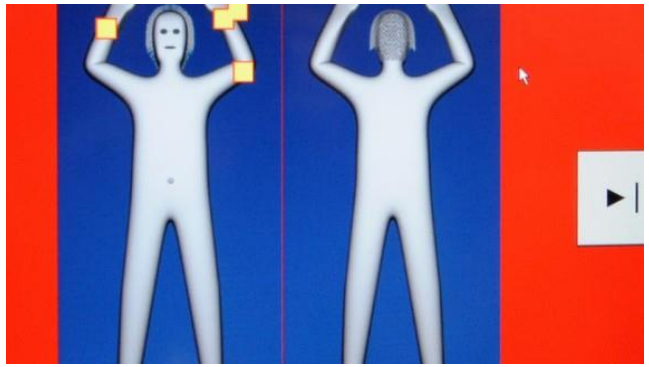
Universality

Uniqueness

Permanence

Detectability

/ Features of biometric characteristics

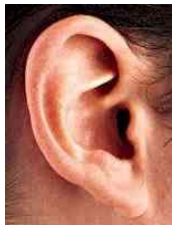


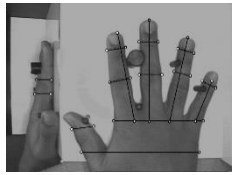
/ Characteristics for biometric identification

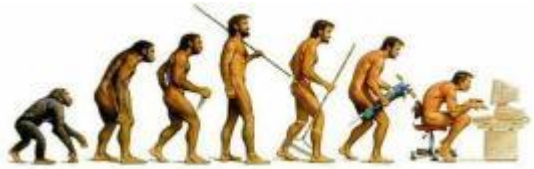
- Physiological features
  - Fingerprint
  - Face
  - Iris
  - Retina
  - Hand geometry
  - Vein pattern
  - Ear geometry
  - DNA
- Behavior-based features
  - Signature (dynamic / static)
  - Gestures / facial expressions while speaking
  - Walk
  - Lip movement
  - Voice / speech behavior
  - Keystroke at the keyboard





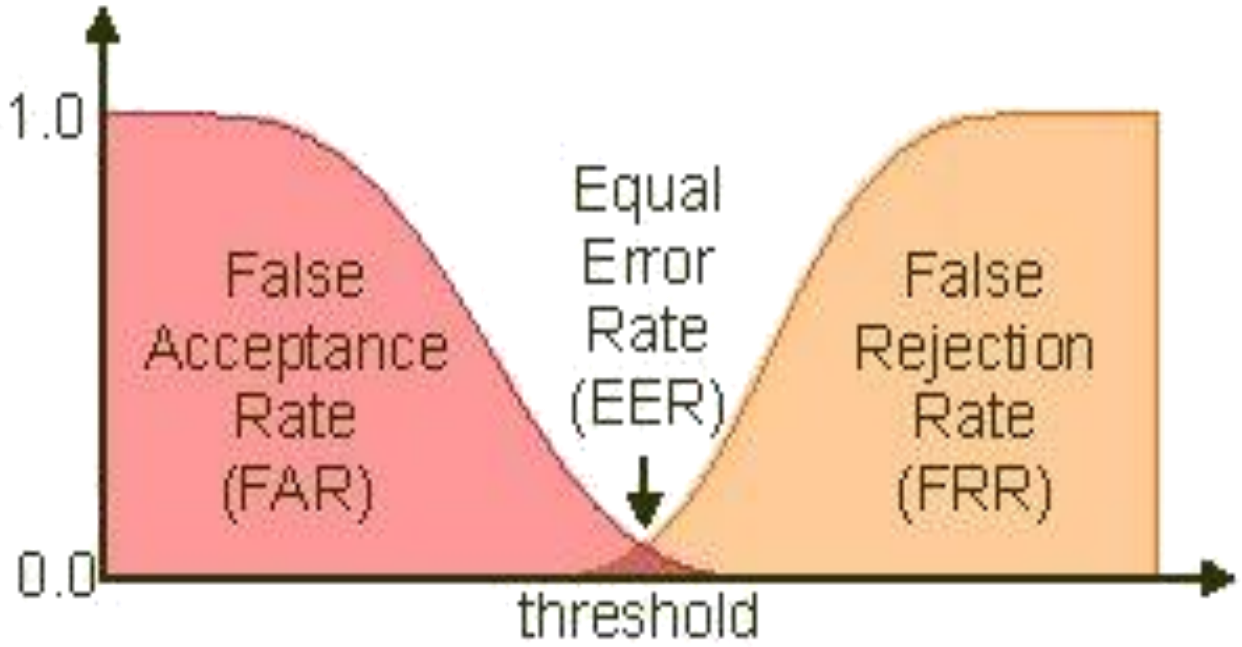





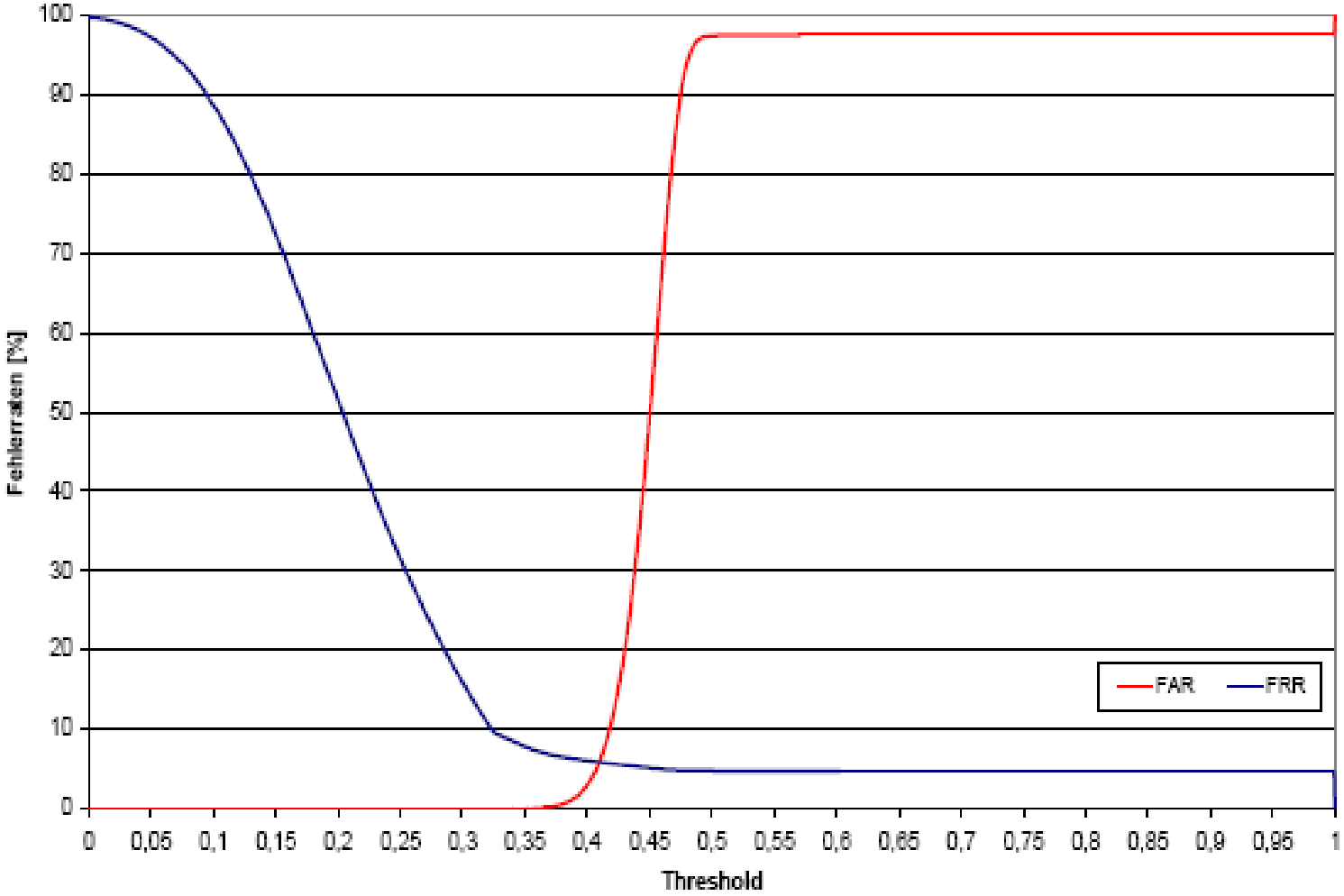

/ FAR and FRR (1)

- Only a probability of correspondence
- False Acceptance Rate FAR
  - Rate of unjustified accepted persons
- False Rejection Rate FRR
  - Rate of unjustified rejected persons
- Equal Error Rate ERR
  - FAR = FRR
- Threshold determines whether the system is "secure" or "comfortable"



/ FAR and FRR (2)

Reality



/ Verification and Identification

- Verification
  - Check against only one reference

- Identification
  - Check against any number of references
  - Probability of false detection increases exponentially with the number of references

- Several attempts against one reference
  - 2 attempts and FAR = p

    $P(2) = p + (1-p)*p$

  - n attempts and FAR = p

    $P(n) = p + (1-p)*p + (1-p)*(1-p)*p + \ldots = 1 - (1-p)^n$

FAR = 0,002
N = 200, P(N) = 32%
N = 2000, P(N) = 98%
N = 10000, P(N) = 99.999%

/ Agenda

- Basics
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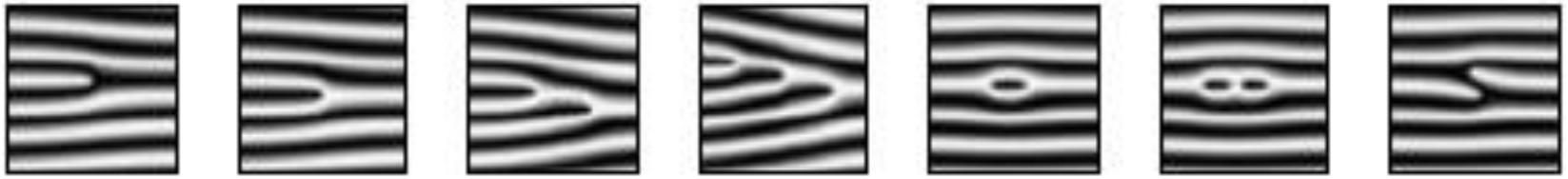
/ Fingerprint: Operation (1)

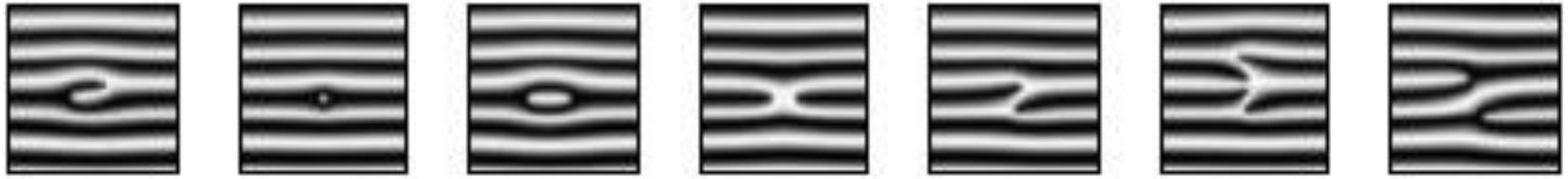
- Sensor types
  - Optical
  - Capacitive
  - Thermal
  - Ultrasonic
  - Pressure
- Process
  - Minutiae
  - Pattern matching over the whole image
  - Follow the papilla segments
  - Position of sweat pores
- 20-30 Characteristics

/ Fingerprint: Operation (2)

Minutiae



End of line | Fork | Double Fork | Triple Fork | Vortex | Double Vortex | Lateral Contact



Hook | Point | Interval | X-Line | Bridge | Double Bridge | Ongoing Line

Source: BSI, „Evaluierung biometrischer Systeme Fingerabdrucktechnologien – BioFinger“, öffentlicher Abschlussbericht

/ Fingerprint: Liveness Detection

- Measurement of the blood oxygen content by determination of the hemoglobin concentration ratios on the basis of the different absorption of different wavelengths of infrared light
- Pulse
- Electrical resistance of the skin
- Temperature
- Reflection properties in the ultrasonic range
- Blood flow

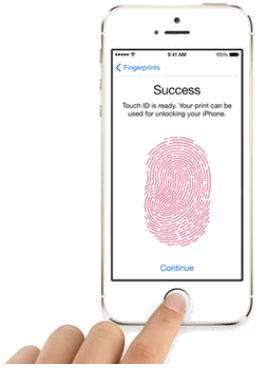
/ Fingerprint: Sensors

Entrance door

Ultrasonic

Live Detection

Capacitive



Qualcomm
Snapdragon

Optical

/ Fingerprint: Vulnerabilities (1)

- Latent image reactivation
  - Breathe on
  - Graphite powder
  - Color powder
- Use of latent images
  - Graphite powder and Tesa
- Build a fingerprint hardcopy
  - Gelatin
  - Wood glue
- Incorrect driver software
  - Access to passwords stored in the Windows registry
  - Preinstalled by leading notebook manufacturers

/ Fingerprint: Vulnerabilities (2)

Authentication to computer

(Video removed)

/ Fingerprint: Advantages and Disadvantages

- Very well researched methods
- High degree of uniqueness
- Cheap sensors
- Suitable for identification

- Good life recognition is cost intensive
- Hygienic concerns
- 5% of people do not have usable fingerprints
- Not tamper-proof

/ Agenda

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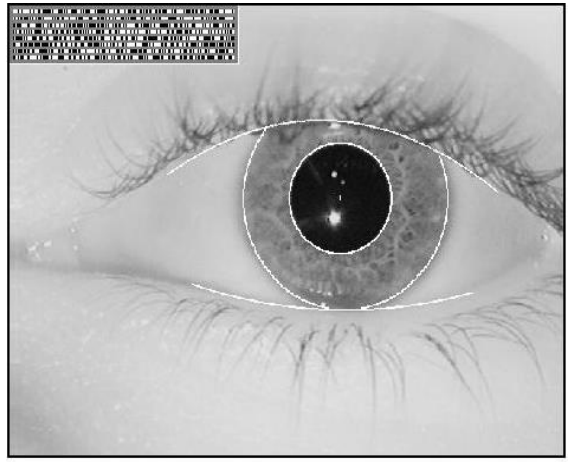
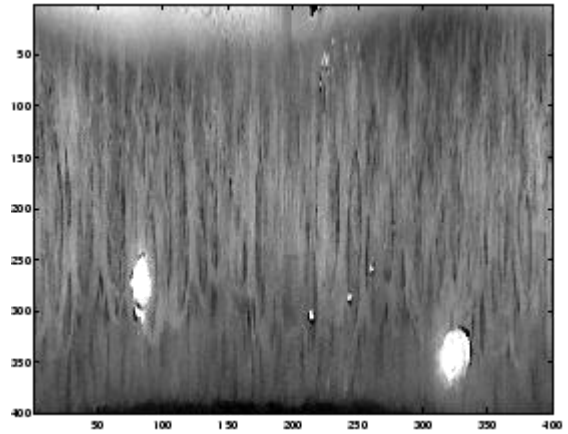
/ Iris Scanner: Operation (1)

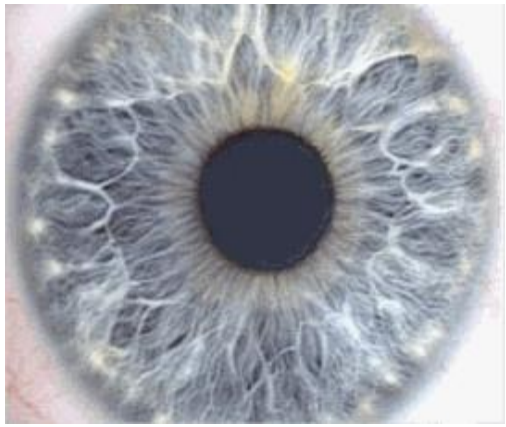
- Illuminating with infrared light
- Macro shot of the eye in the near infrared wavelength (680-850 nm)
- Photographic extraction of iris
- Dividing the iris in 8 circular cutouts
- Detection of remarkable patterns
  (Corona, crypts, fibers, stains, scars, radial furrows, stripes)
- Generation of iris code
  - Gabor Wavelet transformation
  - 244 measures
  - 512 bytes





/ Iris Scanner: Operation (2)

- One globally used algorithm
  - John Daugman, University of Cambridge
- Fast recognition
- Very good FAR and FRR
- Liveness detection
  - Irradiation and reflection
  - Pupillary reflex
- No detection of disease or drug use possible
- Iris indistinguishable after 25 years
  - According to Kevin Bowyer, the error rate changes after 2 years



/ Iris Scanner: Reader

Kiosk system

Mobile phone

Computer access

Building access

eGate

/ Iris Scanner: Vulnerabilities

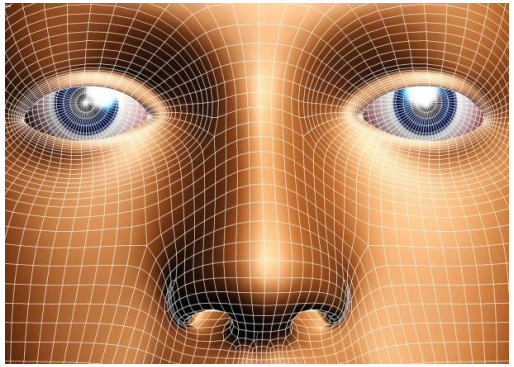
- Outwitting with photo or inkjet print
- Presentation of a video sequence
- Contact lens with printed or hand-painted iris
- Contact lens with iris hologram
- Hard to outwit if liveness detection is active

/ Iris Scanner: Advantages and Disadvantages

- High degree of uniqueness
- High temporal constancy
- Simple liveness detection by pupillary reflex
- Suitable for identification

- Change of characteristics due to illness
- Lighting, glasses, contact lenses
- Costs
- User acceptance
- User behaviour in front of active systems

/ Agenda



- Basics
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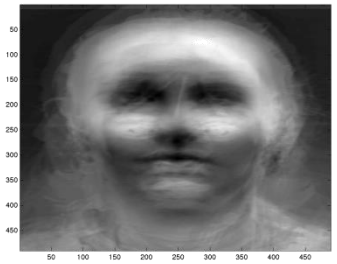
/ Face recognition: Operation

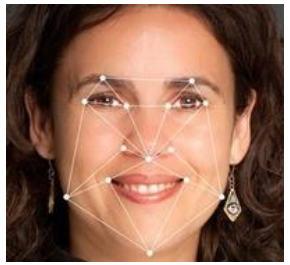
- Based on characteristics
  - Extraction of individual characteristics
  - Classification based on these characteristics
  - Elastic Bunch Graph Matching
  - Detection using geometric characteristics
- Holistic approach
  - Observation of the entire face
  - Template Matching
  - Fourier transformation
  - Eigenface method
- Combination of the above methods



Source: Automatische Gesichtserkennung: Methoden und Anwendungen, Dominikus Baur, Universität München

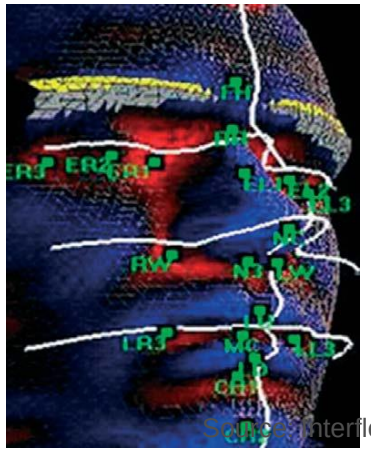
/ Face recognition

- Primarily used are features of the face that are not constantly changing due to the facial expressions
  - upper edges of the eye sockets
  - areas around the cheekbones
  - side panels of the mouth



- Normalization with the aid of prominent points on the face
  - e.g. nose, eyes, mouth, chin
  - Rotation
  - Translation
  - Scaling of the head

- 3D face recognition
  - Stripe projection
  - Systems available since 2010



Scheer Interflex

- Interoperability according to ISO/IEC 19794-5
- Todays FRR of 1 % is acceptable
  - Poor 79% in 1993

/ Face recognition: Vulnerabilities

- Disguise
  - Makeup artist
  - Sunglasses
  - Glasses
- Photo
- Video sequence
- Artificial head

- Poor lightning
- „Grimaces“

/ Face recognition: Advantages and disadvantages

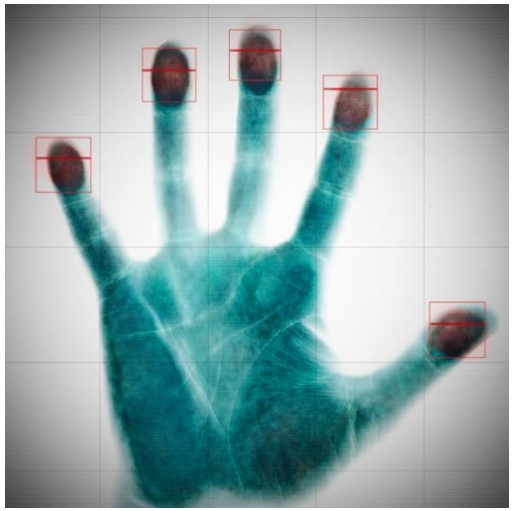
- High usability
- High user acceptance
- Face is always (at least partially) visible
- Can be generated and reviewed without notice

- Low relative constancy
- Low uniqueness
- No cooperation necessary
- Can be generated and reviewed without notice

/ Comparison of Technologies

Item	Fingerprint	Iris Scan	Face Recognition
Uniqueness	?	10e-78	?
FAR	0,002 - 0,2 % 1:50.000 - 1:500	0,0001 % 1:1.000.000	0,01 - 1 % 1:10.000 - 1:100
FRR	0,1 - 5 %	1 %	1 - 20 % (1993: 79%)
Characteristics	25	244	22
Acceptance	-	- -	+ +

/ Agenda



- Basics
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/ Fiction?

(Video removed)

/ Hazards (1)

- Loss of a biometric characteristic

- Fingerprint
  - Security
  - Unique
  - Not tamper-proof
  - Burden of proof
  - Forensic consequences
  - Legal consequences

- Faith in technology
  - Fingerprint of Wolfgang Schäuble
  - Murders deposit foreign DNA at the crime scene (study)

Ein Tatrichter, der seine Überzeugung von der Täterschaft des Beschuldigten auf das Beweisanzeichen der an den Tatorten festgestellten und nach den wissenschaftlichen Grundsätzen der sogenannten Daktyloskopie sorgfältig ausgewerteten Fingerabdrücke des Täters stützt, begeht damit keinen Verstoß gegen Rechtsnormen des Strafrechtes oder gegen allgemeine Erfahrungssätze der Wissenschaft

/ Hazards (2)

Shopping with fingerprint

(Video removed)

„Economics of Crime“

FAR = 0,002
N = 200, P(N) = 32%
N = 2000, P(N) = 98%
N = 10000, P(N) = 99.999%

Source: Planetopia 25.1.2009

/ Apple iPhone

Touch ID

- Apple states that the chance of a random finger unlocking an iPhone is 1 in 50.000
- 1 in 100 results in FAR 1% or 0,01
- 5 fingerprints can be enrolled
- 1 in 10.000 results in FAR 0,0001
- Five unsuccessful fingerprint match attempts are allowed before a password must be entered

FAR = 0,0001
N = 200, P(N) = 2%
N = 2000, P(N) = 18%
N = 10000, P(N) = 63%

FAR = 0,000001
N = 10000, P(N) = 1%
N = 100000, P(N) = 9,5%

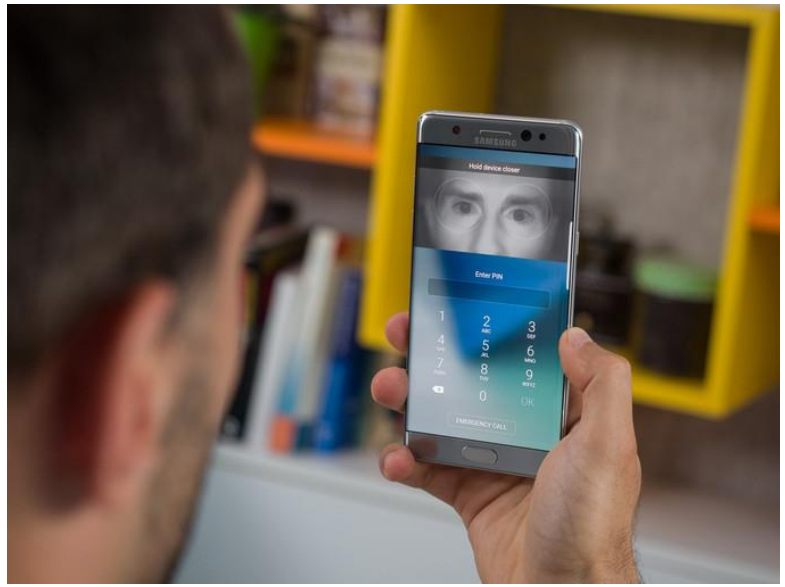
Face ID

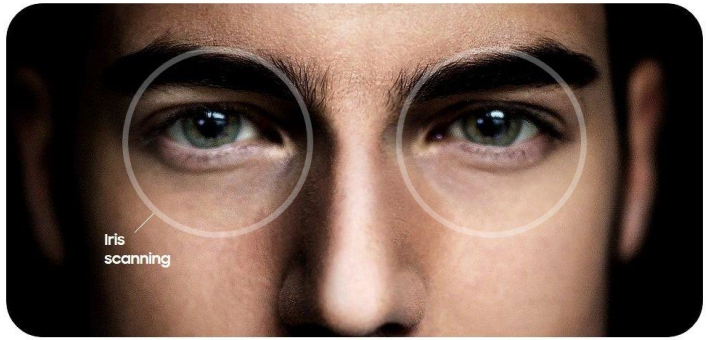
- Projects over 30.000 invisible dots on the face
- Camera reads the dot pattern
- Camera captures an infrared photo
- Collected data are merged
- Apple states that Face ID can not be fooled by
  - High end masks
  - Printed photos
  - Videos
- Due to Apple the chance of a random face unlocking an iPhone is 1 in 1.000.000
- 1 in 1.000.000 results in FAR 0,000001
- Live recognition circumvented by glasses with glue tape

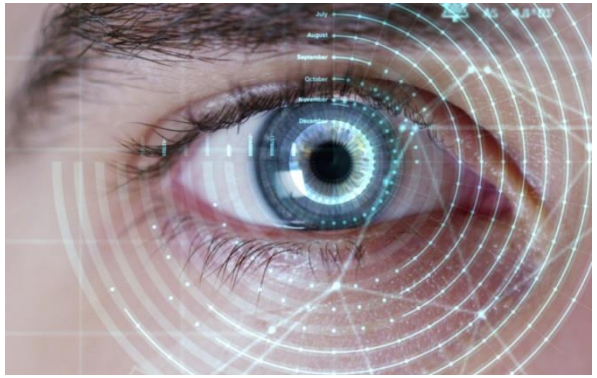
/ Samsung Galaxy S8

Iris Scan

- Works like a charm
  - Enrolled without glasses
  - Works with or without glasses
- Hacked by Chaos Computer Club
  - Photo of the iris in night mode
  - Print photo on laser printer
  - Place contact lens on photo







/ Fiction?

(Video removed)

/ ePass (1)

- Stored in optically machine readable zone
  - Given names and surname
  - Issuing state
  - Pass number
  - Gender
  - Date of birth
  - Expiration date
- Stored in the contactless chip of the passport
  - Photo
  - Two fingerprints as compressed images
- Storage at registry offices
  - Photos are stored at registry offices
  - Fingerprints are not stored at registry offices
  - In contrast to the proposal of the former German Interior Minister Otto Schily

Source: Paßgesetz (PaßG) §21 Paßregister

/ ePass (2)

- The exact usage and storage of the data read out at boundaries is not clear
- Unencrypted wireless transfer of data
- Wireless chips allow unnoticed monitoring and tracking of individuals
- Increase in counterfeit security could be realized even without storage of personal data
- A Study of the BSI showed the immaturity of the technology in biometrics in everyday life
  - Rejection rate of 3 to 23 percent
  - Separate examination of rejected people
  - Unsustainable staffing overhead

/ ePass (3)

- Left Party criticized biometrics strategy of the Federal Government

  According to the Left Party in the Bundestag, the Federal Government has acknowledged that biometric methods can be at best used as secondary early detection of suspected terrorists (13.01.2009)

- EU Parliament agrees on a compromise proposal for biometric passports

  The European Court of Human Rights has set a limit on the national governments with his decision against the British government (Marper vs. UK) recently. Therein, the ECJ declared the storage of DNA data and fingerprints are disproportionate and incompatible with Article 8 of the European Convention on Human Rights. Any national laws to biometric databases would find here their EU legal limit (15.1.2009)

Source: www.heise.de

/ Strange (1)

- Phantom of Heilbronn
  - 40 Crime scenes with identical DNA traces
  - “Different DNA results of "unknown female person" (UWP) in relation to facts that were not plausible from a criminological perspective“
  - Contamination of cotton swabs used for receiving samples of DNA by an employee

- Biometric face recognition for laptops hacked
  - The system has been tricked with a photo of a registered user
  - With fake facial images by generating a large number of images
  - Security experts required the laptop manufacturers to remove biometric authentication from the devices and to warn all users before using the function

Source: www.heise.de

/ Strange (2)


Wieso? Weshalb? Warum?
Wir entdecken unseren Körper
Knochen sind das Gerüst unseres Körpers
... und von dir.
Nur Zwillinge sehen sich zum Verwechseln ähnlich. Oft haben sie sogar die gleiche Art zu sprechen und sich zu bewegen.
Ferse
ANNA
TIBO
HELEN
Kein Mensch auf der Welt hat genau die gleichen Fingerabdrücke wie du. Wie sieht dein Daumenabdruck aus?

/ Wish List

Wikileaks 30.11.2010

- US Secretary of State Hillary Clinton is said to have given their ambassadors in July 2009 secret directives ... to collect biometric data of important UN officials.
- On Clinton's wish list were amongst others passwords and encryption keys used by high-level UN staff for official communication, as well as credit card and frequent flyer numbers.
- Moreover, US diplomats in the DRC, Uganda, Rwanda and Burundi should even collect fingerprints, DNA samples and iris scans of specific target persons from UN circles.

Source: www.heise.de

/ FBI Biometric Database (1)

FBI takes largest biometrics database piecemeal in operation (25.3.2011)

- The "Next Generation Identification" system have reached the first phase of "operational usability".
- Replaces the Integrated Automated Fingerprint Identification System (AFIS) of the US Police.
- The system is initially fed with fingerprints.
- Later to be captured are iris scans, voice samples, pictures of handprints, tattoos, scars and facial shapes.

Source: www.heise.de

/ FBI Biometric Database (2)

FBI provides biometric database completed (16.9.2014)

- With Rap Back, authorized sites may automatically receive updates about conflicts of staff with the law. This would include employees who are dependent in their work on trust, such as teachers.
- In addition, national prosecutors can now access the facial recognition system IPS (Interstate Photo System).
- The FBI said that the images of suspects are compared only with photos of convicted criminals.
- Internal information suggested that other photos may be used, such as shots of crowds or Facebook photos.
- The face recognition system has been criticized massively by civil rights activists.

Source: www.heise.de

/ FBI Biometric Database (3)

- In the FBI office in Clarksburg in the State of Virginia on average around 168,000 fingerprints are being daily analyzed and identified.
- In future, the system should enable 18,000 law enforcement agencies around the clock an automated search for fingerprints, a real-time matching and associated information exchange. Investigators on site will in future be equipped with handheld scanners.
- The Department of Homeland Security (DHS) has in parallel built a private system for fingerprinting and iris scans of travelers entering the United States at airports.
- For the US civil rights activist Barry Steinhardt of the data protection organization Privacy International, there is no question that biometric systems are an important component of future government surveillance projects. He warns that an "Always on" – surveillance society will be possible due to reconcile abilities. The Californian futurologist Paul Saffo warns in this context against that biometric features, unlike some credit card numbers, clang to an individual for it’s life. Errors in government databases could therefore have serious consequences.

Source: www.heise.de

/ FBI Biometric Database (4)

- FBI massively extends their biometric database (22.9.2015)
- Storage of job applicant's fingerprints that employers must send to the FBI for a background check in many professions.
  - Engineers, doctors, brokers, stockbrokers, lawyers, or architects
- Employers and other authorities can additionally send facial images to the FBI.
- The Electronic Frontier Foundation (EFF) is concerned that these are then used to track the movement of people between different locations.
- According to EFF, confusion with the physical characteristics resulted in innocent persons migrating to jail.

Source: www.heise.de

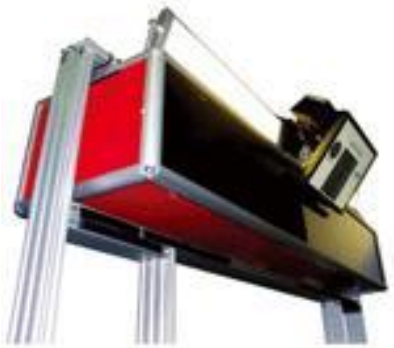
/ EU-Project E-Border Control

EU-Project: Federal police testing e-border control with ten fingerprints (17.3.2015)

- Frankfurt airport runs a trial where up to ten fingerprints are taken from volunteers.
- The German MP Andrej Hunko called on "to avoid absolutely" the tests because they paved the way for a "huge border police data retention of travel profiles".
- The Left Party called the entire package of "smart borders" a "stimulus plan for the defense and biometrics industry.“
- It was actually launched to control migrants who overdraw their visa.
- However, the Federal Government sees the high level of investment justified only if police authorities have access to the collected facial and fingerprint data and could monitor travelers in general more intensively.

Source: www.heise.de

/ Voluntary



Léon de los Aldamas, Central Mexico (31.10.2010)

- Global Rainmakers Iris scanner "Hbox"
- Recognizes up to 50 moving persons per minute.
- Offenders are automatically recorded in an iris database.
- Innocent citizens can register voluntarily.
  - Global Rainmakers promises a number of benefits.
  - Pay by iris scan – the system just looks into a customer's eye, identifies him, and debits money from his bank account.
  - Passports or train tickets will become obsolete in the long term.
- „In the future, everything you want to open - one's own house, the car, the door to the office – will be accessible with a single key: the iris“ (Jeff Carter, COO of Global Rainmakers).
- „At a certain point, it is striking to refuse than to participate. Everyone will participate.“
- „In ten years every person, every place, and every object will be linked”.

Source: www.heise.de, Die Welt

/ Face Recognition Champions League Finals

Cardiff (8.5.2018)

- Field test for identifying (criminal) persons
- Bad recognition ratio
  - 170.000 visitors
  - 2470 persons identified
  - 2297 persons wrongly identified
  - 92% false positives
  - Correct hit rate about 7%
- Police states "No system is 100% secure"
- "No one was arrested because of a false positive"

Source: www.heise.de

/ Face Recognition Train Station

Berlin (15.10.2018)

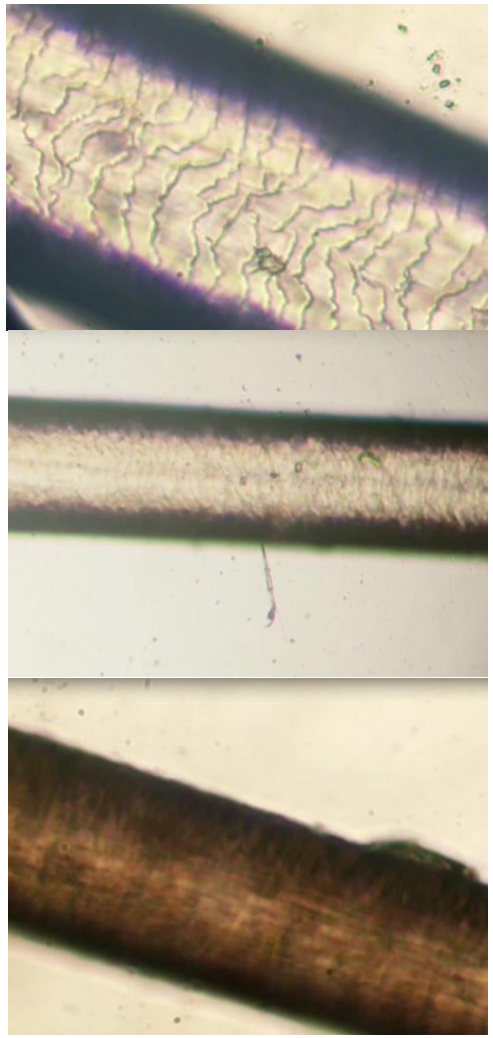
- Field test for identifying (criminal) persons walking nearby
- Bad recognition ratio
  - Best provider 69 %
  - Worst provider 19 %
- Bad FAR
  - Average of 0,67 %
  - 90.000 travelers per day
  - 600 persons per day are wrongly identified.

Source: www.heise.de, Chaos Computer Club

/ Wrong Analysis (1)

Deadly cover-up at FBI (19.4.2012)

- Since the 90s, the US government had knowledge of significant sources of error in the investigation laboratories of the FBI.
- Blatant errors in the microscopical analysis of hair samples and skin residues in murder and homicide cases (no DNA analysis).
- The results in 2004 were passed neither to wrongly imprisoned inmates which have been imprisoned for years not to their attorneys.
- Only the prosecutors involved were informed. They retained the partly exculpatory evidence largely for themselves.
- Hundreds of cases of miscarriages of justice and unjustified penalties
  - 268 judgements
  - 257 wrong judgements
  - 32 death penalties
- Wrongly convicted persons were not rehabilitated.
- The Justice Department is refusing to publish the names of those people.



Source: http://www.derwesten.de/panorama/hunderte-justizirrtuemer-toedliche-vertuschung-beim-fbi-id6569273.html

/ Wrong Analysis (2)

- The 17-year Santae Tribble was convicted of capital murder although several witnesses testified under oath that Tribble was with them at the time of the crime.
- The core of the argument of the prosecutor were hair samples that were assigned to Tribble.
- As it turned out at the internal audits, the FBI evidence objects in truth have been dog’s hair.
- A forensic scientist has apparently committed multiple fatal errors especially in hair analysis.
- "FBI experts repeatedly "came to unscientific conclusions" that were a great disadvantage for the accused."
  - Bombing of Oklahoma 1995
  - Murder trial against the former football star O.J. Simpson
  - First attacks to the World Trade Center in New York 1993

Source: http://www.derwesten.de/panorama/hunderte-justizirrtuemer-toedliche-vertuschung-beim-fbi-id6569273.html

/ EU Biometric Database

EU bodies agree on biometrics super database (6.2.2019)
EU Parliament decides on huge biometrics database (23.4.2019)

- EU databases are to be made "smarter" and specifically interlinked.
- Linked via a search portal
  - Schengen Information System (SIS) with about 80 million entries
  - Visa Register (VIS)
  - Eurodac file containing fingerprints of asylum seekers
  - Entry and exit system for biometric border control (Smart Borders)
  - European Travel Information and Authorisation System (ETIAS)
- Aim of the EU Commission: "Matching existing data with a single click"
- In addition, a "store for identity data" has been agreed
  - Date of birth, passport number, fingerprints and digital facial images

China and India do have that already!

Source:https://www.heise.de/newsticker/meldung/EU-Gremien-einigen-sich-auf-Biometrie-Superdatenbank-4298747.html

/ Fingerprints in German ID cards

EU states should be allowed to use the biometric features freely (9.3.2019)

- Clause in the draft EU regulation
- Mandatory inclusion of two digital fingerprints in identity cards
- Member States should also be allowed to use the biometric information stored on an RFID chip for other, unspecified purposes beyond the "personalisation" of ID cards and pure identity verification.
- The Commission's original draft provided that
  - the fingerprints may only be stored on the chip itself,
  - reference data is stored in a highly secure manner with the registration authorities and
  - must be deleted at the latest 90 days after the documents have been issued.
- With the seemingly insignificant addition in Article 10, there would now be carte blanche for EU countries to use the sensitive data elsewhere or possibly even to store it in a central information system.

For security only!

Source:https://www.heise.de/newsticker/meldung/EU-Gremien-einigen-sich-auf-Biometrie-Superdatenbank-4298747.html

/ Data leak at security company

Biometric data ended up unencrypted in the internet (14.8.2019)

- System "Biostar 2" of the Korean security company "Suprema"
  - Said to be the market leader in Europe for biometric access control systems
  - Fingerprints or facial scans on a web-based platform for smart door locks
  - Also used by the British police and several defense companies and banks
- Access to over 27.8 million records and 23 gigabytes of data
  - Fingerprint and facial recognition data
  - Facial photos of users
  - Unencrypted usernames and passwords
  - Logs of access to facilities
  - Security levels and clearance
  - Personal data of personnel
- Full biometric data stored mostly unencrypted
- "Instead of storing a hash of the fingerprint that can't be reverse engineered, they store people's actual fingerprints that can be copied for malicious purposes"

Source:https://www.t-online.de/digital/sicherheit/id_86265732/datenleck-bei-sicherheitsfirma-biometrische-daten-landeten-unverschluesselt-im-netz.html

/ Face Recognition India

India plans one of the world's largest facial recognition programs (25.1.2020)

- Facial recognition in a café
  - If a customer agrees, a camera will snap a photo of them as they make a purchase, recognize them on future visits and automatically credit loyalty points
- The face recoginition programs facilitates
  - Consolidation of central image databases from government agencies
  - Integration of photos from newspapers and mug shots
  - Matches surveillance camera images with databases
  - Raises the alarm when it finds wanted people
- Integration of India's biometric database feared
- Indians like the extra cameras
- Quote from a retailer: "The government can install as many cameras as it wants. We Indians don't care about privacy; the security of our lives and property are more important."

Source:https://www.tagesspiegel.de/politik/mehr-sicherheit-oder-mehr-ueberwachung-indien-plant-landesweite-gesichtserkennung/25475040.html

/ Obligation for fingerprints in German identity cards

Mandatory fingerprints in new ID cards (2.8.2020)

- Left and right index fingers to be stored on ID card chip from Aug. 2, 2021
- Criticism from data protection and fundamental rights organizations
- Encroachment instead of protection
  - Massive biometric recording of fingerprints without cause
  - Useless and dangerous encroachment by the state on the population
- Risk of expanded access
  - In Germany, police and intelligence services have been allowed to automatically access biometric passport photos from ID cards since 2017
  - Little control by supervisory authorities
  - Expansion of access to fingerprints is a matter of time
- Loss of control by companies
  - In case of "cooperation with an external service provider" (Recital No. 42), private companies may also have access to the data
  - See also Article 11 "Protection of personal data and liability".
- Risk of data networking
  - "security" policymakers are already working on a networked, EU-wide database structure with fingerprints, facial images and other biometric data

#Perso ohne Finger!

Source:https://digitalcourage.de/blog/2020/keine-fingerabdruecke-personalausweis-persoohnefinger

/ Amazon One: The hand as a credit card

Amazon One authenticates payments contactless with the palm of your hand (1.10.2020)

- Payment via a credit card stored in the system
- Deployment initially in two of Amazon's in-house Go grocery stores at the company's U.S. headquarters in Seattle
- Previously
  - Upon entering the store, customers must identify themselves via an Amazon account
  - The groceries in the cart are detected via cameras and sensors and the price of the cart is calculated
  - Payment is made automatically when leaving the Go store via the Amazon account
- With Amazon One
  - The account is no longer mandatory for payment
  - One-time registration via the Amazon One reader
  - Scanning of one or two hand palms
  - Conversion to a digital signature
  - Link to credit card inserted in scanner
  - Encrypted and secured on Amazon servers
  - No data stored on the reader
  - Customer identifies themselves when entering the Go store

Source: https://www.heise.de/news/Amazon-One-Die-Hand-als-Kreditkarte-4915849.html

/ Last but not least

Quote of an online publication

„As biometric data can not be modified or passed on to other people, an extremely high security against forgery is given.“

/ Conclusion

- Biometric systems can increase security
- Prerequisite is an exemplary implementation
- Biometric systems can be bypassed
- Saved biometric data arouse desires
- Strength of evidence be challenged legally

„It is not only for what we do that we are held responsible, but also for what we do not do."

(Moliere)

Many Thanks!

/ More Information

http://www.biotrust.de/

http://www.biometrie-online.de/

http://www.bsi.bund.de/literat/studien/BioFinger/index.htm

Behrens/Roth „ Biometrische Identifikation”

EU-Studie: „Usability of Biometrics in Relation to electronic signatures“

https://berlin.ccc.de/index.php/Biometrie

http://www.google.de

http://www.wikipedia.de