FRU started total internal Reflection

Question 18

Not yet answered

Flag question

In FTIR fingerprint sensors, what is the component converting the light into an electric charge?

Select one:

- Imaging polarizer
- Array of photodiodes or phototransistors
- Light Emiting Diode (LED)
- Sheet prism
- Fiber optic Plate (FOP)

Question 19

Not yet answered

Flag question

Which of the following technologies or aspects are **not** included in the ISO/IEC JTC1 SC37.

Select one:

- Finger minutiae data format
- Face Image Data format
- Vascular Biometric Image Data
- Walking Pattern Sequence Data

Question **20**

Not yet answered

Flag question

Given a generic face recognition system, select the **correctly ordered** sequence of processig steps.

Select one:

- Localization, alignment and normalization, feature extraction, processing, comparison.
- Localization, alignment and normalization, processing, feature extraction, comparison.
- Processing, localization, alignment and normalization, feature extraction, comparison.
- Alignment and normalization, localization, processing, feature extraction, comparison.
- Localization, alignment and normalization, feature extraction, processing, comparison.

- Localization
- Alignment + normaliz.
- processing → (eg: dove più illuminazione ecc..)
- Extra feat
- comparison

Question **21**

Not yet answered

Flag question

In CMOS imaging sensors based on a single chip color filter, the micro-lenses are localized:

Select one:

- Between the metal connections and the photo-sensitive Si area
- Outside the Si-chip
- Above the gate oxide of the MOS capacitor
- Just above the color filter layer
- At several depths inside the Si-chip, depending on the wavelength to be measured

Question 22

Not yet answered

Flag question

Select the **wrong** statement concerning Level 2 features for fingerprint matching.

Select one:

- They are computed on a ridge skeleton image.
- They are characterized by location, orientation and type.
- They identify points where ridges emerge, split, end or intersect.
- They require 500 dpi resolution to identify inner holes.

Question 23

Not yet answered

Flag question

In verification biometric systems, the false rejection (or false non-match) event occurs when:

Select one:

- The user claims his real identity, but the user is not enrolled in the system
- The user is an impostor (not enrolled), he claims a fake identity, and the system find a match between the acquired features and the saved template
- The user is enrolled, he claims his real identity, and the system find a match between the acquired features and the saved template
- The user is enrolled, he claims his real identity, and the system does not find a match between the acquired features and the saved template

Question 24

Not yet answered

Flag question

The sensitive pixel array of fingerprint MEMS sensors contains:

Select one:

- A metal grounded ring
- Micro-antennas
- Single-plate capacitors
- Double-electrode capacitors
- Pyroelectric sensitive devices

Question **25**

Not yet answered

Flag question

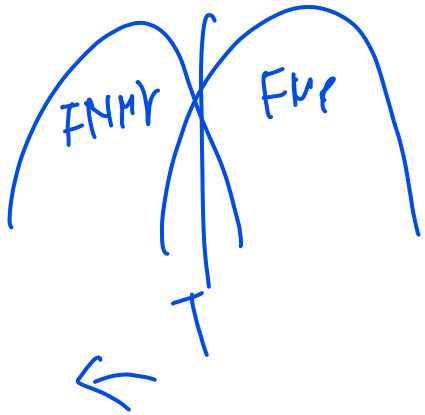
In verification biometric systems, the False Match Rate (FMR) and False Non-Match Rate (FNMR) depend on the threshold value t of the decision module. If the threshold value t is decreased:

Select one:

- The FMR increases and the FNMR decreases
- Both FMR and FNMR decrease
- The FMR decreases and the FNMR increases
- None of the answer is correct, as FMR and FNMR are independent to t
- Both FMR and FNMR increase

OK

100%.



Question **26**

Not yet answered

Flag question

The interface module integrated into a fingerprint scanner is responsible for:

Select one:

- The communication of the scanner with external electronics
- The mechanical and chemical protection of the sensor
- The matching or non-matching decision
- Acquiring the fingerprint pattern
- Converting the analog signal generated by the sensor to digital signal

Question **27**

Not yet answered

Flag question

Which fingerprint scanner uses a CCD or CMOS camera to acquire the fingerprint pattern?

Select one:

- Frustrated Total Internal Reflection scanners
- Piezoelectric scanners
- Thermal scanners
- None of the answers is correct
- MEMS scanners

→ I know from slide!

Question **28**

Not yet answered

Flag question

Which of the following types of minutiae are considered by the ANSI/NIST-ITL 1, 2007 standard.

Select one:

- Ending, bifurcation, spur, island
- Ending, bifurcation, lake, undefined.
- Ending, bifurcation, compound, undefined.
- Ending, trifurcation, compound, undefined.
- Ending, bifurcation, spur, undefined.

✓ o/L

Question **29**

Not yet answered

Flag question

In digital cameras, one or a series of lenses may cause chromatic aberration effects in the final acquired image due to:

Select one:

- None of the answers is correct
- The use of an achromatic doublet
- Atomic defects in the lenses
- Geometrical deformations on lens surfaces

Question **30**

Not yet answered

Flag question

In relation to the Kazemi-Sullivan algorithm, select the **wrong** statement among the following:

Select one:

- It is based on cascade regressors.
- It employs a gradient boosting algorithm.
- Split decisions are made on the same pixel set.
- Landmarks are warped in order to make pixel intensities match.

Question **31**

Not yet answered

Flag question

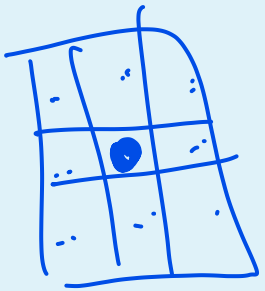
Given the Pointcaré index equation

$$PI = \frac{1}{\pi} \sum_{i=0}^{7} \delta\left(O\left[(i+1)_{mod\ 8}\right] - O\left[i\right]\right)$$

select the **correct** statement among the following:

Select one:

- PI=-1 corresponds to a loop point.
- The function δ outputs values from 0 to π.
- The function PI is computed from the orientation of 9 neighbors.
- PI is computed from the sum of the orientations.
- PI for whorl is a combination of two PI loops.



Question 32

Not yet answered

Flag question

Considering the equation

$$arg\max_W \frac{W^T W_{PCA}^T S_B W_{PCA} W}{W^T W_{PCA}^T S_W W_{PCA} W}$$

select among the following sentences the **wrong** one.

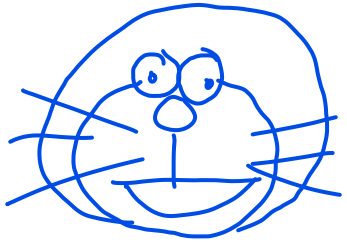
Select one:

- The equation computes a Fisherface matrix for face identification.
- W allows to compute a set of global features for face identification.
- W_{PCA} define a basis change to represent data.
- The equation is used in Elastic Bunch Graph Matching for face identification.

PCA } are
LDA, global

?

this
is for local



Question **33**

Not yet answered

Flag question

Pixels of cameras working at Near-InfraRed (NIR) range are commonly built in:

Select one:

- Si, as Si energy gap is higher than the NIR photons
- InGaAs, as InGaAs energy gap is higher than the NIR photons
- InGaAs, as InGaAs energy gap is lower than the NIR photons
- Si, as Si energy gap is lower than the NIR photons

Question **34**

Not yet answered

Flag question

Considering the Mel-Cepstrum features, select the **wrong** statement among the following.

Select one:

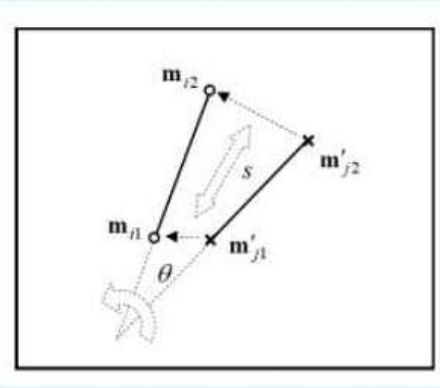
- Histogram-based normalization can be used to increase the accuracy.
- Usually, 39 coefficient related features are used.
- They can be configured to capture middle-term variations.
- The first 12-13 DCT coefficients are used with their first and second derivatives.

Question **35**

Not yet answered

Flag question

Considering the scaling factor computation in a refinement of fingerprint alignment (described by the parameter s in the following image)



Select the **wrong** statement among the following ones.

Select one:

- Minutiae $\mathbf{m}_{i1}, \mathbf{m}_{j1}$ belong to the same fingerprint.
- The parameter s corresponds to the ratio between the length of $\mathbf{m}_{i1}, \mathbf{m}_{i2}$ and the length $\mathbf{m}_{j1}, \mathbf{m}_{j2}$.
- An iterative optimization can be applied.
- Parameter s is computed after computing maximum Matching Pair Support.
- The final set of parameters is $\Delta x, \Delta y, \theta, s$.

Question **36**

Not yet answered

Flag question

In active appearence model (AAM), the coordinates of a fiducial point $\mathbf{p}_j$ can be expressed as

$\mathbf{p}_j = \mathbf{p}_\mu + E_s\, \omega_{s,j}$.

Select the **wrong** statement among the following:

Select one:

- $\omega_{s,j}$ is obtained from a minimization routine.
- Texture variations are modelled by a similar warping equation.
- E_s is optimized from a PCA decomposition.
- $\omega_{s,j}$ is computed separateley from the texture warping coefficients $\omega_{g,j}$.

Question **37**

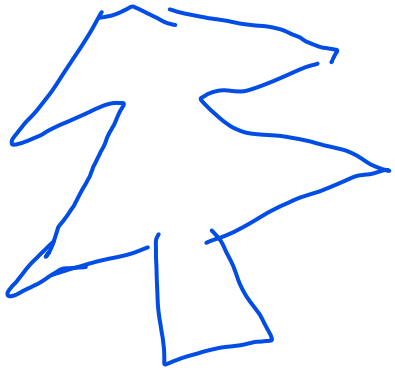
Not yet answered

Flag question

Passive thermal fingerprint scanners based on pyroelectric pixels acquire the fingerprint pattern:

Select one:

- By applying a low-power heat pulse, which generates an higher heat variation at valleys than at ridges
- By applying a low-power heat sinusoid, which generates an higher heat variation at valleys than at ridges
- By applying a low-power heat pulse, which generates an higher heat variation at ridges than at valleys
- By measuring the increase of temperature induced by the body temperature on pixels in contact with ridges



Question **38**

Not yet answered

Flag question

Considering the thinning operation, select the **wrong** answer among the following:

Select one:

- It is based on a Hit-and-Miss transform.
- A structuring element can be applied only.
- The output pixel values depends on whether pixels of the image and pixels of the structuring element match.
- It operates on a bilevel image.

Question 39

Not yet answered

Flag question

In CCTV video surveillance systems, box-style security cameras have the main advantage of:

Select one:

- Controlling the movement and the zoom by joystick or by software
- Dome shape housing, which is resistant to vandal attacks
- Customization of the focal length of lenses
- Night vision thanks to the pre-installed infra-red illuminators
- Small dimensions