SCQ0089500 - BIOMETRICS 2020-2021

Question **14**

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 wrong statement among the following:

Select one:

- PI=2 correspond to a whorl point.
- Computes a cumulative change for the orientation field.
- PI=1 corresponds to a loop point.
- Computes a cumulative change on a close path for minutiae coordinates.
- The function δ outputs values from $-pi/2$ to $\pi/2$.

SCQ0089500 - BIOMETRICS 2020-2021

Question **15**

Not yet answered

Flag question

To avoid the image smearing, a mechanical shutter is required in CCD camera sensors designed in the:

Select one:

- Frame transfer layout
- Full frame layout
- Interline transfer (ILT) layout
- All answers are correct

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **16**

Not yet answered

Flag question

In Viola-Jones face detector, consider the following equation

$$h_j(w) = \begin{cases} 1 & \text{if } p_j f_j(w) \leq p_j \theta_j \\ 0 & \text{otherwise} \end{cases}$$

Select the wrong statement among the following.

Select one:

- p_j can assume values ± 1.
- j is the index of the classifier.
- $f_j(w)$ is the response of the filter.
- w is the parameter to be optimized.
- It defines a weak classifier.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **17**

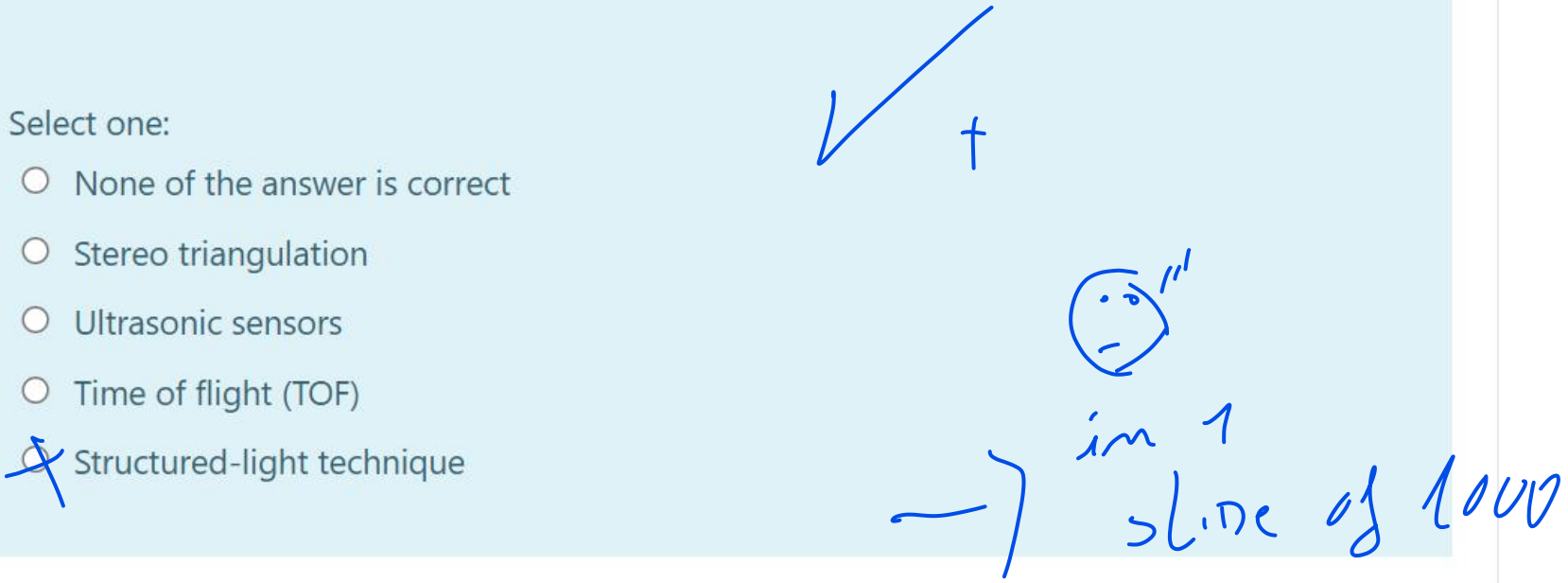
Not yet answered

Flag question

The FaceID by Apple Inc. is a biometric 3D technology based on:

Select one:

- None of the answer is correct
- Stereo triangulation
- Ultrasonic sensors
- Time of flight (TOF)
- Structured-light technique



Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **18**

Not yet answered

Flag question

Among the following facial feature set, select the one that contains only local features.

Select one:

- Dlib facial landmark, Elastic Bunch Graph matching, LBP
- LBP, PCA, Eigenfaces
- Dlib facial landmark, Manifolds, LDA
- Tensorface, Elastic Bunch Graph Matching, PCA
- Tensorface, Elastic Bunch Graph Matching, ICA
- Eigenfaces, Tensorfaces, LDA

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **19**

Not yet answered

Flag question

In each pixel of CMOS cameras, e-h pairs efficiently generate in:

Select one:

- Potential wells of MOS capacitor
- The inverted region of MOS capacitor
- Gate oxide of MOSFETs
- The depleted region of MOS capacitor
- Depletion region of photodiode

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **20**

Not yet answered

Flag question

Considering the equation

$$arg\max_W \frac{W^T S_0 W}{W^T S_1 W}$$

select among the following sentences the correct one.

Select one:

- The equation defines the Eigenfaces decomposition and S_1 between clas scatter matrix
- The equation defines the Linear Discriminant analysis decomposition and S_1 interclass scatter matrix.
- The equation defines the Principant Component Analysis decomposition and S_1 is the between class scatter matrix.
- The equation defines the Fisherface decomposition and \(S_1 \) is the interclass scatter matrix

Quiz navigation

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40

Finish attempt ...

Time left **0:44:12**

- The equation defines the Eigenfaces decomposition and S_1 between clas scatter matrix

- The equation defines the Linear Discriminant analysis decomposition and S_1 interclass scatter matrix.

- The equation defines the Principant Component Analysis decomposition and S_1 is the between class scatter matrix.

- The equation defines the Fisherface decomposition and S_1 is the interclass scatter matrix.

- The equation defines the Principant Component Analysis decomposition and S_1 interclass scatter matrix.

- The equation defines the Indipendent Component Analysis decomposition and S_1 is the between class scatter matrix.

25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40

Finish attempt ...

Time left **0:44:04**

SCQ0089500 - BIOMETRICS 2020-2021

Question **21**

Not yet answered

Flag question

In fingerprint scanners based on sweep technology, the translation vector is generated by:

Select one:

- The demosaicking block
- The slice quality computation block
- The relaxation block
- The slice pair registration block
- The mosaicking block

Pg 298.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **22**

Not yet answered

Flag question

Considering the Mel-frequency Cepstral coefficients, select which among the following statements is wrong.

Select one:

- They are computed on a non-uniform frequency grid. ✓
- Spectrum can be computed on partially overlapping segments.
- They can also be computed from the logarithm of absolute DCT coefficients (for better compaction). ✓
- They can be computed from the logarithm of absolute FFT coefficients. ✓
- A Hamming window weights the signal

? it's a trap!

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **23**

Not yet answered

Flag question

In capacitive fingerprint sensors, the capacitance related to the external protective layer of single pixels is:

Select one:

- Inversely proportional to the thickness of the protective layer
- Inversely proportional to the relative permittivity (dielectric constant) of the material used for the protective layer
- Proportional to the relative humidity of the environment
- Higher at ridges than at valleys
- Depends on the local distance between the chip surface and the finger skin

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **24**

Not yet answered

Flag question

Select which set of model-free modellings for gait recognition uses binary (bilevel) images.

Select one:

- Motion-Silhouette Image and Forward Single-step History Image
- Motion-History Image and Motion-Silhouette Image
- Motion-History Image and Backward Single-step History Image
- Motion-Energy Image and Gait-Energy Image
- Motion-History Image and Active-Energy Image

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **25**

Not yet answered

Flag question

Considering a rubber sheet image of an iris, we can surely state that:

Select one:

- It can not be used if the image is partially covered by eyelids.
- It allows removing occlusions from iris image.
- Hairs are detected via segmentation.
- It includes the primary specular reflection.
- Eyelids are identified by searching for a parabolic edge within the inner circle.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **26**

Not yet answered

Flag question

Considering the dilation ratio of a pupil, select which of the following statements is wrong

Select one:

- It depends on health and decision making.
- It depends on the emotional state and the illumination.
- The higher, the smaller is the pupil.
- It depends on ambient light and affects the FHD.
- Larger dilation increases the mean of authentic distribution.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **27**

Not yet answered

Flag question

Select the wrong statements concerning the M82 algorithm:

Select one:

- a. Small deformation can be compensated by a tensor transformation.
- b. The list of matching minutiae pairs is ordered according to their weights.
- c. A coarse pre-alignment is performed using the Top 2 matching pair
- d. It performs a relative pre-alignment which improves the matching accuracy.
- e. Before tensor transformation, Top 2 matching pairs are selected.
- f. A weight is assigned to each matching pair.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **28**

Not yet answered

Flag question

Which biometric feature is suitable for the identification of individuals?

Select one:

- Iris
- Fingerprint
- Retina
- Palm vein
- All answers are correct

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **29**

Not yet answered

Flag question

FTIR sensors acquire the fingerprint images:

Select one:

- At different finger rotations with respect to the sensor
- Under a single wavelength of the illumination light
- Under different illumination intensities of a single wavelength
- Under different frequencies of acoustical signal
- Under different wavelengths and polarization status of the illumination light

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **30**

Not yet answered

Flag question

Considering the Mel-Cepstrum features, we can surely state that:

Select one:

- The first low-pass DCT coefficients are replaced by the first and the second derivatives.
- They can be configured to capture middle-term variations.
- The first and the second derivatives are used to extend their variations.
- Cepstral mean subtraction can be used.
- The first 39 DCT coefficients are used.

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **31**

Not yet answered

Flag question

Given the following set of stages in a gait cycle, select those that belongs to the stance phase.

Select one:

- loading response, initial swing, mid-stance
- mid-stance, pre-swing, terminal stance
- terminal stance, pre-swing, mid-swing
- initial swing, terminal stance, initial contact
- loading response, mid-stance, mid-swing

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **32**

Not yet answered

Flag question

Which biometric sensor measures the fingerprint patterns below the surface of the skin?

Select one:

- Capacitive sensor
- FTIR sensor
- Electrical RF sensor
- Pressure sensor
- None of the answers is correct
- Thermal sensor

Previous page

Next page

SCQ0089500 - BIOMETRICS 2020-2021

Question **34**

Not yet answered

Flag question

Considering the split test equation

$$h(I_{\pi_i}, \hat{\mathbf{S}}_i^{(t)}, \theta) = \begin{cases} 1 & \text{if } |I_{\pi_i}(u') - I_{\pi_i}(v')| < \tau \\ 0 & \text{otherwise,} \end{cases}$$

select the wrong statement.

Select one:

- v' is a translated and scaled version of x_v.
- u' and v' are different for each node.
- u' converges to v' after some iterations.
- θ includes the parameter τ.
- When the output is 1, u' and v' have converged

Previous page

Next page

0089500 - BIOMETRICS 2020-2021

n **37**

ed

question

Concerning an iris code, select the wrong statement among the following.

Select one:

- Masks identifies valid samples. ✓
- Gabor response gives a two bit representation. ✓
- Commercial iris codes are made of 1024 sample points. ✓
- Sampling is performed using 8 radii. ✓
- It is generated from a set of Gabor filters that output real values values quantized on 4 levels. ✗

↳ real and immaginary

ous page

Next page

)089500 - BIOMETRICS 2020-2021

38

d

uestion

Ultrasonic fingerprint scanners use:

≥ 20 kHz

Select one:

- Sound waves at frequencies lower than 10 Hz
- RF sinusoidal signals at frequencies higher than 10 Hz and lower than 100 kHz
- Sound waves at frequencies higher than 20 kHz
- Sound waves at frequencies higher than 10 Hz and lower than 20 kHz
- RF sinusoidal signals at frequencies higher than 100 kHz
- RF sinusoidal signals at frequencies lower than 10 Hz

us page

Next page

0089500 - BIOMETRICS 2020-2021

39

ed

question

Fingerprint scanners based on electro-optical sensors always require a:

Select one:

- Prism
- Piezo-electric crystal
- CCD camera
- Polarizer
- Light-emitting component

OIC

bus page

Next page

)089500 - BIOMETRICS 2020-2021

40

d

question

In FTIR fingerprint sensors, the internal reflection of the incident light at the interface prism/finger occurs at:

Select one:

- Ridges, if the incidence angle is larger than the critical angle
- Valleys, if the incidence angle is larger than the critical angle
- Ridges, if the incidence angle is smaller than the critical angle
- Ridges, if the incidence angle is equal to the critical angle
- Valleys, if the incidence angle is smaller than the critical angle

us page

Finish attempt ...