Iniziato	sabato, 21 maggio 2022, 11:22
Stato	Completato
Terminato	sabato, 21 maggio 2022, 16:46
Tempo impiegato	5 ore 23 min.
Punteggio	17,00/21,00
Valutazione	**24,29** su un massimo di 30,00 (**81**%)

Domanda 1

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

CMOS cameras typically require more power than CCD cameras.

- a. False ✔
- b. True

La risposta corretta è: False

Domanda 2

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

Multispectral Sensor Image (MSI) acquires multiple images:

- ○ a. At different wavelengths of illumination light
- ○ b. At different polarization status
- ○ c. At the same average temperature of the finger
- ● d. All the answers are correct ✓

La risposta corretta è: All the answers are correct

Domanda 3

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

Optical FTIR fingerprint sensors generally include:

- ● a. Light source, optical system, and image sensor ✓
- ○ b. Lenses, which are sensitive to FTIR phenomena
- ○ c. OLED sensor
- ○ d. Only a LED and multiple CCD/CMOS cameras
- ○ e. Pyroelectric pixels

La risposta corretta è: Light source, optical system, and image sensor

Domanda 4

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

✔

In CMOS cameras, the pixels read-out procedure is performed:

- ○ a. By an interline charge transfer to the neighbor column pixel
- ○ b. By following the Bayer color sensor pattern
- ○ c. By one column at a time
- ◉ d. By one row at a time   ✔

La risposta corretta è: By one row at a time

Domanda 5

Risposta errata

Punteggio ottenuto 0,00 su 1,00

The paternity recognition is commonly based on:

- ○ a. PCR - Polymerase Chain Reaction
- ○ b. SSRs - Simple Sequence Repeats
- ◉ c. SRDRE - Simple Repeats in DNA of Restriction Enzymes   ✘
- ○ d. All answers are correct
- ○ e. VNTRs - Variable Number of Tandem Repeats

La risposta corretta è: VNTRs - Variable Number of Tandem Repeats

Select the correct statement:

- a. In color filter sensors, the photodiodes convey the light into the microlenses.
- b. Acquisitions by digital zoom do not cause loss of resolution in the final image.
- c. The smaller the focal length is, the wider is the field of view (FOV).
- ● d. Chromatic aberration of lenses can be corrected by trichroic prism. ✖

La risposta corretta è: The smaller the focal length is, the wider is the field of view (FOV).

Domanda **7**

Risposta
corretta

Punteggio
ottenuto 1,00
su 1,00

Which fingerprint sensor can detect patterns below the surface of the skin?

- a. None of the answer is correct
- ● b. Electrical RF sensor ✔
- c. FTIR sensor
- d. Capacitive sensor

La risposta corretta è: Electrical RF sensor

Which of these sensors are insensible the finger dryness and wetness?

- ● a. All answers are correct ✔
- ○ b. Electrical RF sensors
- ○ c. Pressure piezoelectric sensors
- ○ d. Ultrasonic sensors

La risposta corretta è: All answers are correct

After the sample collection, the DNA extraction methods consist in the following steps:

- ○ a. DNA fragmentation, DNA separation, and hydratation
- ○ b. Lysis, DNA fragmentation, DNA amplification, and DNA separation
- ○ c. DNA separation, DNA amplification, Southern blotting and hydratation
- ● d. Lysis, DNA separation, and hydratation ✔

La risposta corretta è: Lysis, DNA separation, and hydratation

Silicon is a good semiconductor for thermal cameras:

- ○ a. True
- ◉ b. False ✔

La risposta corretta è: False

Which of the following biometric systems is not suitable for identification of individuals among large population of users?

- ○ a. DNA recognition
- ○ b. Fingerprint recognition
- ◉ c. Hand geometry recognition ✔
- ○ d. Retina recognition

La risposta corretta è: Hand geometry recognition

CCD cameras may be affected by fixed patter noise (FPN) appearing as vertical stripes in the image.

- a. False
- b. True ✖

La risposta corretta è: False

Which is one of the disadvantage of active thermal sensors?

- a. Fabrication cost, as the thermal pixels are made in gold
- b. Higher power requirements compared to passive thermal sensors ✔
- c. Cannot be used in environments with temperature of about 36 °C
- d. Spoofable with 3D plastic fake fingers

La risposta corretta è: Higher power requirements compared to passive thermal sensors

Domanda 14

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

Which technique is not related to off-line fingerprint recognition?

- ⦿ a. Rolled single finger ✔
- ○ b. Chemical development
- ○ c. Powder dusting

La risposta corretta è: Rolled single finger

Domanda 15

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

In camera sensors, the dark current arises from statistical variation in the number thermally generated electrons in Si

- ⦿ a. True ✔
- ○ b. False

La risposta corretta è: True

Domanda 16

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

CCD cameras have typically an higher resolution and a higher cost than CMOS camera.

- ○ a. False
- ⦿ b. True ✔

La risposta corretta è: True

Domanda 17

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

How is called the error occurring at the feature extraction module due to poor image quality?

- ⦿ a. Failure to Process (FTP) ✔
- ○ b. Failure to Capture (FTC)
- ○ c. Failure to Enroll (FTE)
- ○ d. False Match Rate (FMR)

La risposta corretta è: Failure to Process (FTP)

MEMS sensors are based on:

- a. Radio frequency sinusoidal signals
- b. Temperature differential measurements
- c. Sensing capacitance variations induced by the high capacitance of airgaps below the valleys
- d. Sensing capacitance variations induced by a mechanical pressure ✔

La risposta corretta è: Sensing capacitance variations induced by a mechanical pressure

CMOS cameras may be affected by undesired blooming, which appears in the acquired image as vertical bright lines.

- a. False
- b. True ✘

La risposta corretta è: False

Domanda 20

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

In optical fingerprint sensors, the light that hits the detector is converted into an electric signal by:

- ○ a. The sheet prism
- ○ b. The imaging polarizer
- ○ c. The Fiber optic Plate (FOP)
- ⦿ d. Photodiodes or phototransistors ✔

La risposta corretta è: Photodiodes or phototransistors

Domanda 21

Risposta corretta

Punteggio ottenuto 1,00 su 1,00

A substantial current flows between p-type and n-type regions under an applied forward bias:

- ⦿ a. True ✔
- ○ b. False

La risposta corretta è: True