Unit 13 - Week 8: Continuous Wavelet Transforms (Contd..)

Assignment for Week 7 and 8

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Which of the following is/are TRUE for a wavelet?

(a) The area under the wavelet should be zero.
(b) The magnitude square of Fourier transform should decay rapidly than the frequency.
(c) The value of Fourier transform should be zero at zero frequency.
(d) The amplitude of the wavelet should be non-negative.

No, the answer is incorrect.
Score: 0
Accepted Answers:

2) Choose correct statement(s) from the following.

(a) There exists no exact relationship between scale and frequency.
(b) Qualitatively, scale and frequency share inverse relationship.
(c) Peak and the center frequency coincide for a symmetric wavelet.
(d) None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:

3) Select the correct statement with respect to the computational aspects of the CWT

(a) In the convolution based method, the CWT is evaluated at all values of τ in a single
(b) In the FFT based method, the CWT cannot be evaluated at all values of τ in a single
(c) FFT based method assumes that the signal is periodic outside the observation interval
(d) All of the above.

No, the answer is incorrect.
Score: 0
4. Select the correct statement(s) from the following in regard to wavelet transforms:

(a) The aggregate of all details at scales $s > 1$ is approximation of the signal at $s = 1$.
(b) The scales $s < 1$ contain the details of the signal at scale $s = 1$.
(c) The aggregate of all details at scales $s < 1$ is approximation of the signal at $s = 1$.
(d) The scales $s > 1$ contain the details of the signal at $s = 1$.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c

5. The duration-bandwidth product for the mother wave as compared to the wavelet

(a) Higher at larger scales and lower at smaller scales.
(b) Lower at larger scales and higher at smaller scales.
(c) Higher at all scales.
(d) Identical at all scales.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a

6. Which of the following is TRUE with regard to vanishing moments and compact support of a wavelet?

(a) The compact support increases with increase in vanishing moments of wavelet.
(b) The compact support decreases with increase in vanishing moments of wavelet.
(c) The compact support is independent of vanishing moments of wavelet.
(d) None of the above.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a

7. Which of the following is TRUE regarding the reliability (as a result of edge effects) scalogram values across scales?

(a) The reliability is more at higher scales than lower scales.
(b) The reliability is more at lower scales than higher scales.
(c) The reliability at intermediate scales is more than higher and lower scales.
(d) The reliability is same across all the scales.

No, the answer is incorrect.
Score: 0
Accepted Answers:
a
8. A Daubechies 3 (db3) wave is used for analysis of a signal. If it is required to scale into frequency, then the value of frequency for scale, $s = 2$ is _________. (You may use 12 iterations for generating db3. Report your answer to one decimal place.)

No, the answer is incorrect.
Score: 0
Accepted Answers: 

8) 

9) Questions 9 to 11 are based on the data file a7_cwt.mat. The data file consists of CWT signal. The sym4 wave was used in computing the continuous wavelet transform. The sampling vector used is $s_0 \times 2^{1:0.01:log_2 N}$, where $s_0$ is 2 and $N$ is 1000 (length of the signal). The sampling interval is $10^{-3}$ sec. It is given that the signal contains a sinusoid, a linear chirp, and two impulses.

9. Which of the following inference(s) is/are TRUE based on the given continuous wavelet transform?

- (a) A sinusoid is present throughout the signal length.
- (b) A linear chirp is present throughout the signal length.
- (c) Around $t = 0.3$ sec, there is a transition from linear chirp to a sinusoid.
- (d) Around $t = 0.3$ sec, there is a transition from sinusoid to a linear chirp.

No, the answer is incorrect.
Score: 0
Accepted Answers: 

9) 

10. The frequency of the sinusoid present in the signal is

- (a) higher than most of the frequencies present in the chirp.
- (b) lower than most of the frequencies present in the chirp.
- (c) contained in the frequency interval (5–20) Hz.
- (d) contained outside the frequency interval (5–20) Hz.

No, the answer is incorrect.
Score: 0
Accepted Answers: 

10)
11. Which of the following is TRUE regarding the impulses present in the signal?

(a) Both the impulses are located after 0.4 sec.
(b) Both the impulses are located before 0.4 sec
(c) One impulse is located after 0.4 sec and other is below 0.4 sec.
(d) The time gap between the impulses is less than 0.2 sec.

No, the answer is incorrect.
Score: 0
Accepted Answers:
c