EE-451 - Image analysis and pattern recognition – Prof. Jean-Philippe Thiran
Spring 2022
List of questions for the interviews

Part 1 – long answers

1. Present how to perform geometrical transformations of a digital image? Take the example of a translation of a non-integer number of pixels. L1 s12-17
2. What is image restoration? On this context what is inverse filtering and what is a Wiener filter? L1 s36-49
3. Explain what object labeling is and the algorithm to implement it. L2 s3-18
4. What are the main principles of edge detection, and the two main families of methods to do edge detection? Present typical methods for each family. L2 s20-25
5. What are the 4 main operators of binary mathematical morphology? Explain each of them. L2 s20-26
6. What are the Fourier descriptors? L4 s22-30
7. What are the Fourier descriptors?
8. What is a Freeman code? L4 s11-15
9. What is a morphological skeleton? L4 s18
10. What is a Bayesian classifier? (principle, advantages & limitations, application to Gaussian cases) L5 s7-18
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Part 2 – short answers

1. What is a Median filter?
2. What is a Median filter?
3. What is the Laplacian of Gaussian (LoG) method for edge detection? (this question cannot be taken if question 4 is taken in Part 1)
4. How do we calculate the axes of inertia of a binary object?
5. What is an Euclidean distance classifier?

6. What is a Mahalanobis distance classifier?
7. What is a k-NN classifier?
8. What is a linear perceptron and how can we train it?
9. What is a Multi-layer perceptron?
10. What is supervised and non-supervised classification?
11. What is non-supervised classification and describe the k-means algorithm?