

2001 Paper 12 Question 12

Computer Vision

Understanding, classifying, and identifying human faces has been a longstanding goal in computer vision. Yet because the face is an expressive social organ, as well as an object whose image depends on identity, age, pose and viewing angle, and illumination geometry, many forms of variability are all confounded together, and the performance of algorithms on these problems remains very poor. Discuss how the different kinds and states of variability (e.g. same face, different expressions; or same identity and expression but different lighting geometry) might best be handled in a statistical framework for generating categories, making classification decisions, and recognising identity. In such a framework, what are some of the advantages and disadvantages of wavelet codes for facial structure and its variability?

[20 marks]