

5. Discuss the importance of filter design in real-time computer vision applications, considering factors like computational efficiency, accuracy, and adaptability to varying environmental conditions.

Answer:

computational efficiency: It is really important how fast a process is computing. By choosing a right filter design helps to build a computer vision application which computes faster. Like in case of self-driving cars it is really important to take fast decision, so it is really important to have high computational efficiency.

Accuracy: The filter design is a really important factor for the accuracy of the computer vision applications. The right choice of filter design helps to reduce the noise and good feature detection in the images. This noise removal and good feature detection helps in further computer vision application like the object detections, classification of the objects, tracking the object.

Adaptability to varying environmental conditions: The adaptability to varying environmental conditions, is really important to choose right filter. Since the real world is dynamics in nature which changes condition after every second like weather lighting etc. So we should make a filter design which is adaptive in nature and adapt the condition change. This type of environments varying condition become problems in case of computer vision application of traffic monitoring, weather predict etc. so it is really important to adapt the varying condition by choosing a right filter design.