Short Questions

1. What is the principle behind pinhole cameras?
2. How does radiometry measure light in space?
3. Explain the concept of radiometry for light surfaces.
4. What are the important special cases in radiometry?
5. Describe the qualitative radiometry approach.
6. How do different light sources affect shading?
7. Explain the concept of local shading in detail.
8. What is photometric stereo, and how is it applied?
9. What are global shading models, and how do they handle interreflections?
10. Describe the physics of color.
11. How does human perception influence color interpretation?
12. What are the methods for representing color in images?
13. Explain the model for image color.
14. How can surface color be determined from image color?
15. Discuss the significance of pinhole cameras in photography.
16. What are the advantages of using radiometry in light measurement?
17. How do different surfaces interact with light in radiometry?
18. Provide examples of important special cases in radiometry.
19. How does the choice of light sources impact shading?
20. Compare and contrast local shading with global shading models.
21. How can photometric stereo be utilized in practical applications?
22. What are the challenges associated with global shading models?
23. Explain the relationship between physics and color perception.
24. Discuss the factors influencing human color perception.
25. What are the common methods for representing color in digital images?
26. Describe a practical scenario where image color modeling is crucial.
27. How can image color data be used to infer surface color?

28. What are the key components of pinhole camera construction?
29. How does radiometry differ from photometry in measuring light?
30. What factors affect the radiometric properties of surfaces?
31. How do shadows influence the perception of objects in an image?
32. Describe a situation where local shading is particularly important.
33. What are the limitations of photometric stereo techniques?
34. How can global shading models account for interreflections accurately?
35. Explain how light wavelengths contribute to the physics of color.
36. Discuss the role of cultural factors in color perception.
37. Compare the RGB and CMYK color models.
38. How do color spaces affect color representation in images?
39. Provide an example of color-based surface material identification.
40. What are the historical developments leading to pinhole camera technology?
41. Discuss the role of radiometry in astrophysics.
42. How does surface texture influence shading in radiometry?
43. Explain the process of shading in the presence of multiple light sources.
44. Describe a practical application of photometric stereo in computer vision.
45. What are the computational challenges of implementing global shading models?
46. How does the concept of metamerism relate to color perception?
47. Discuss the importance of color calibration in digital imaging.
48. How can color histograms be used in image analysis?
49. Describe the process of calibrating a pinhole camera.
50. What are the potential future advancements in radiometry and color science?
51. What is the concept of linear filters and convolution?
52. Explain the significance of shift-invariant linear systems in image processing.
53. How are spatial frequencies and Fourier transforms related in image processing?

54. What is sampling, and how does it relate to aliasing in image processing?
55. Describe how filters can be used as templates in image processing.
56. What are the challenges associated with edge detection in the presence of noise?
57. How are derivatives estimated in edge detection algorithms?
58. Explain the process of detecting edges in an image.
59. What are the different methods for representing texture in images?
60. Describe the use of oriented pyramids in texture analysis and synthesis.
61. How can local models be sampled to synthesize textures in image processing?
62. Discuss the concept of "shape from texture" in computer vision.
63. What are some common applications of linear filters in image processing?
64. How do shift-invariant linear systems enhance image analysis tasks?
65. Explain the role of Fourier transforms in analyzing spatial frequencies in images.
66. How can aliasing be mitigated in image sampling processes?
67. Discuss the template matching approach using filters in image recognition tasks.
68. What are the key factors affecting edge detection accuracy in noisy images?
69. Describe techniques for robustly estimating image derivatives in edge detection.
70. Compare and contrast different edge detection algorithms.
71. How do texture features contribute to image analysis and recognition?
72. Explain the concept of multiscale texture analysis using oriented pyramids.
73. Discuss the process of synthesizing textures by sampling local models.
74. How can texture information aid in 3D shape reconstruction from images?
75. What role do linear filters play in image enhancement?
76. Describe applications of shift-invariant linear systems in image restoration.
77. How does Fourier analysis assist in image compression techniques?

78. Explain the relationship between sampling rate and aliasing artifacts in digital images.
79. Discuss the effectiveness of filter-based object detection methods.
80. How can edge-preserving filters improve image segmentation results?
81. Describe the role of noise reduction filters in image denoising tasks.
82. What are the limitations of edge detection algorithms in complex scenes?
83. Explain how texture analysis can aid in material recognition tasks.
84. Discuss the advantages of using oriented pyramids for texture representation.
85. How can texture synthesis techniques be applied in image editing software?
86. Describe the process of recovering surface shape from texture cues.
87. What are some real-world examples of linear filter applications?
88. Discuss the importance of shift invariance in image feature detection.
89. How do Fourier descriptors represent image shape characteristics?
90. Explain the concept of undersampling and its effects on image quality.
91. Compare the performance of different edge detection algorithms in noisy environments.
92. Describe the trade-offs between texture analysis methods based on frequency and spatial domains.
93. Discuss the challenges of texture synthesis in generating realistic images.
94. How can texture-based methods contribute to medical image analysis?
95. Explain the role of linear filters in image deblurring techniques.
96. Describe the applications of shift-invariant linear systems in remote sensing imagery.
97. How do Fourier transforms facilitate image watermarking processes?
98. Discuss methods for mitigating aliasing artifacts in computer graphics rendering.
99. Explain how filters are used in feature extraction for machine learning tasks.

100. What advancements can be expected in linear filter techniques for future image processing applications?
101. What are the key concepts in the geometry of multiple views?
102. How does stereopsis contribute to 3D reconstruction?
103. Explain the process of human stereopsis in depth perception.
104. What is binocular fusion, and how does it relate to stereopsis?
105. How can the use of more cameras enhance 3D reconstruction?
106. What are the fundamental principles of two-view geometry?
107. Describe the process of reconstructing 3D scenes from multiple views.
108. Discuss the mechanisms underlying human stereopsis.
109. How does the brain fuse information from both eyes to perceive depth?
110. What advantages does utilizing multiple cameras offer in stereoscopic vision?
111. What are the challenges in estimating depth from two views?
112. Explain the concept of epipolar geometry in stereo vision.
113. How do algorithms reconstruct 3D scenes using stereopsis?
114. Describe the physiological aspects of human stereopsis.
115. What factors influence successful binocular fusion?
116. How does increasing the number of cameras improve depth perception?
117. Discuss the role of camera calibration in multiple-view geometry.
118. Explain the significance of correspondence matching in stereopsis.
119. What neural mechanisms enable binocular fusion in humans?
120. How does the arrangement of cameras affect 3D reconstruction accuracy?
121. What are the limitations of two-view geometry in depth estimation?
122. Describe how epipolar constraints simplify stereo matching algorithms.
123. What computational methods are used for 3D scene reconstruction?
124. Discuss the impact of visual cues on human stereopsis.
125. How can the fusion of information from multiple cameras enhance depth perception?