

## Revision Questions - Augmented Reality Interfaces

1. What is virtual reality?
2. What is augmented reality?
3. What are the differences between virtual and augmented reality?
4. Explain the 3 I's of VR
5. What is Telepresence and artificial reality?
6. What are haptics?
7. Describe Milgram's Reality-Virtuality continuum
8. Explain Mann's mediated reality
9. What is metaverse?
10. What are the important Issues in augmented reality?
11. Describe the interaction design process
12. Describe coordinate relationships in augmented reality
13. What is ARToolKit and how it works?
14. What are the main advantages and disadvantages of ARToolKit?
15. What is Metaio and how it works?
16. What is Vuforia and how it works?
17. What is Wikitude and how it works?
18. Describe the hierarchical structure of ARToolKit
19. Describe the ARToolKit data-flow
20. Describe the ARToolKit pipeline
21. What are the components of the human eye?
22. What is field of view?
23. What is focal length?
24. What is a diopter?
25. What is ocularity?
26. What is interpupillary distance?
27. What is vignetting?
28. What is eye relief?
29. Specify the thin lens equation
30. What is large expanse extra perspective
31. What is a fresnel lens?
32. Classify augmented reality displays
33. What is a head-up display?
34. What are the characteristics of head mounted displays?

35. How video see-through head augmented reality works?
36. How optical see-through augmented reality works?
37. What are the advantages and disadvantages of video see-through head augmented reality?
38. What are the advantages and disadvantages of optical see-through head augmented reality?
39. What are the advantages and disadvantages of monitor-based augmented reality?
40. What is head mounted projector and how it works?
41. What is a cave and immerse desk?
42. Explain spatial displays
43. What is monitor based augmented reality and how it works
44. What is eye multiplexed augmented reality?
45. What is tracking and how it works?
46. What are tracking requirements for augmented reality?
47. What are the typical tracking technologies for augmented reality?
48. What is a mechanical tracker and how they work?
49. What are electromagnetic trackers and how they work?
50. What are optical trackers and how they work?
51. What is motion tracking and how it works?
52. What are acoustic trackers and how they work?
53. What are inertial trackers and how they work?
54. What are GPS trackers and how they work?
55. What is differential GPS and how it works?
56. What is assisted GPS and how it works?
57. What is WiFi positioning?
58. What is marker-based tracking and how it works?
59. What is known-template tracking?
60. What is natural feature tracking?
61. Explain random forest algorithm
62. Explain FERN algorithm
63. Explain PTAM algorithm
64. What is hybrid tracking and how it works
65. What is augmented reality registration?
66. Explain the differences between chroma Key and Z-Key
67. What are the main sources of registration errors?
68. How static registration errors can be reduced?
69. What are dynamic registration errors and how can be reduced?
70. What are user interface design principles?
71. What are the advantages and disadvantages of interaction styles?

72. What are the advantages and disadvantages of direct manipulation?
73. What are the advantages and disadvantages of menu systems?
74. What are the advantages and disadvantages of command interfaces?
75. What are natural language interfaces?
76. What are the four main types of augmented reality interfaces and how they work?
77. Explain the interface design path for augmented reality
78. What are interface metaphors?
79. What is the “Star Interface”?
80. What are the principles of designing tangible augmented reality?
81. What is the MagicBook and what are the main features?
82. Explain ARToolKit’s calibration method
83. What is wearable computing?
84. What is the wearable vision?
85. What is the difference between wearable and mobile computing?
86. What is humanistic intelligence?
87. Why do we use wearable computing?
88. What are functional textiles?
89. What are the universal design principles for wearable augmented reality?
90. What are micro-interactions?
91. What is the NASA-TLX?
92. What are the social implications in wearable augmented reality?
93. Explain the prototype design process
94. What are sketched interfaces?
95. What is the Land Warrior project?
96. What are brain computer interfaces?
97. What is functional magnetic resonance imaging?
98. What is functional near-infrared spectroscopy?
99. What is magnetoencephalography?
100. What is the electroencephalogram?
101. What are the main principles of EEG?
102. What is the 10-20 system?
103. What are the three main types of EEG-based BCIs?
104. What is the event related potential and how it works?
105. What is sensorimotor rhythms and how it works?
106. What are mu rhythms?
107. What is steady state visually evoked potential and how it works?
108. What is BCI illiteracy and how to improve it?
109. What are the advantages and disadvantages of Neurosky?

110. What are the advantages and disadvantages of Emotiv EPOC?
111. What are the major parameters in user interface evaluation activities?
112. What are the methodologies for data gathering?
113. Explain the differences between formative and summative evaluation
114. What is cognitive walkthrough?
115. What is heuristic evaluation?
116. What is a usability experiment?
117. What is an independent variable and what a dependent variable?
118. What are the data collection techniques?
119. How can we measure user performance?
120. What are the advantages and disadvantages of laboratory studies?
121. What are the advantages and disadvantages of field studies?
122. What are the ethics of human experimentation?
123. What are the criteria for choosing an evaluation method?
124. What are the criteria for choosing subjects for evaluation?
125. What are the typical experimental measures?
126. What are the types of user studies in augmented reality?
127. What is the typical hardware used in augmented reality evaluation?
128. What is collaborative learning?
129. Provide a taxonomy of collaboration tools
130. Explain Bloom's taxonomy
131. What is collaborative augmented reality?
132. Explain "Construct3D" system
133. What are functional and cognitive seams?
134. Provide two different ways of collaboration
135. What is holography and how it works
136. What is the future of augmented reality?
137. Explain the requirements of applying augmented reality in higher education
138. Explain the requirements of applying augmented reality in archaeology
139. Explain the requirements of applying augmented reality in navigation
140. Explain the requirements of applying augmented reality in gaming
141. Explain the requirements of applying augmented reality in environmental monitoring
142. Explain the requirements of applying augmented reality in music