

183.586 Computer Vision Systems Programming VO

Exam Information

Christopher Pramerdorfer

Computer Vision Lab, Vienna University of Technology

November 25, 2014

1 List of Questions

1. What factors should be considered when choosing a programming language?
2. Is there a “best” programming language? Why (not)?
3. What is the relation between image processing and Computer Vision (CV)?
4. What is the purpose of image processing? Name some examples.
5. Why should one not think in terms of algorithms when approaching CV problems?
6. What is the preferred way to approach CV problems and why?
7. What are the three steps to model-based CV solutions?
8. What is the difference between a model and an algorithm?
9. What is numerical optimization and how do iterative methods work?
10. How are images formed? Describe the pinhole camera model.
11. How does stereo reconstruction work?
12. What are depth sensors and how do they work?
13. Briefly describe some applications that utilize scene geometry.
15. What are the three discussed steps of 3D reconstruction?
16. Why is depth data well-suited for person detection?
17. How does Kinect’s player pose estimation work?

18. What is a random forest and how does it work?
19. What kinds of object recognition are there and why is it challenging?
20. How does instance recognition of rigid objects work?
21. What are local features and why are they suitable for instance recognition?
22. How does Viola & Jones' face detector work?
23. How does the bag of words model work and what is it used for?
24. What is the limitation of "traditional" object recognition methods?
25. What is deep learning and how are such models structured?
26. What is a convolutional neural network? How does it differ from a traditional MLP?
27. What is a convolutional layer?
28. How are convolutional neural networks structured?