

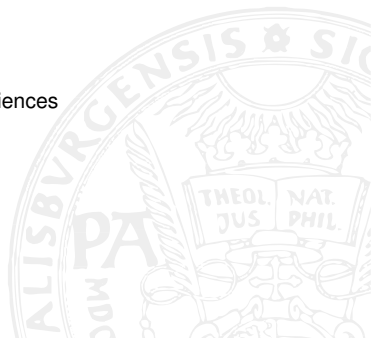
Slides Media Data Formats

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Questions for Lecture Notes Sections 2.2 - 2.2.1

- 1 Which additional element has to be considered in assessing the tradeoff in lossy compression ?
- 2 PSNR is closely related to a classical error-metric - which one ?
- 3 Why is PSNR not well correlated with human perception and why is it still widely used ?
- 4 What is MOS and how is it used to assess image quality measures ?
- 5 Why is it not possible to reverse quantisation without loss ?
- 6 What is the difference between scalar and vector quantisation ?
- 7 Under which condition does uniform quantisation make sense ?

Questions for Lecture Notes Sections 2.2.1 - 2.2.2

- 8 What is quantisation with deadzone around zero ?
- 9 What do we exploit in non-uniform quantisation ? Why does this strategy implicitly optimize PSNR ?
- 10 Why might non-uniform quantisation be suboptimal ? Give an example !
- 11 What is adaptive quantisation ? Do we need it in transform coding ?
- 12 In how far does DPCM generalise differential / predictive coding ?
- 13 Give an example of a non-linear predictor of order two !
- 14 What is local adaptive prediction ? What is the downside ?

Questions for Lecture Notes Sections 2.2.2 - 2.2.3

- 15 How can predictor coefficients be optimized ?
- 16 Is DPCM a lossless or lossy compression technique ?
- 17 Which image media data format uses a DPCM coding scheme ?
- 18 Discuss the three stages of (lossy) transform coding and provide examples for actual techniques used in the typical third stage.
- 19 Describe the idea of using (orthogonal) basis functions to represent a function by analogy to orthogonal basis vectors in R^2 .
- 20 Explain the second motivation of using integral transforms in compression. What is the data used in the motivating example for coordinate axes rotation ?
- 21 Explain the relation of mean-squared error and variance in this example.

Questions for Lecture Notes Section 2.2.3 - 3

- 22 Explain the differences in variance in the motivating example before and after the rotation.
- 23 Why is the Karhunen-Loeve transform optimal as well as sub-optimal in the context of compression ?
- 24 Why is DFT not optimally suited for compression ? In which compression field is it still used for which purpose ?
- 25 Explain the two strategies how to select coefficients for quantisation in transform coding.
- 26 How does codebook-based compression work in the lossy case ?
- 27 Explain the colour coding concept of palette images. Why are they difficult to process ?
- 28 Why do we perceive different colours in different quality (in terms of evolution and physiology) ?