Audio- / Videosignalverarbeitung
Advanced Digital Signal Processing
Digital Signal Processing 2

Seminar 2

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Homework assignment

1. Use two audio signals
   a) Read in a music fragment
   - *Same signal as in Homework 1*

   b) Read in **another** music fragment (which was not used before and has max length – **10 sec**)
2. Scalar quantizer
   a) Implement a uniform mid-tread quantizer with M=16 levels (corresponding to 4 bits)
   b) Apply it to the music signal from 1a) and listen to the decoded (inverse quantized) signal
   c) Do you hear quantization noise?
   - *Use the implementation from Homework 1*

Homework assignment

3. Vector Quantizer
   a) Implement a vector quantizer (VQ) with dimension N=2 and M=16^2=256 code vectors (again corresponding to 4 bits per sample)
   b) Train the VQ using the LBG algorithm on the training set (signal from 1b))
   c) Encode the signal 1a) with it, and decode it (inverse quantize it).
   d) Listen to this signal to hear the quantization noise.

- *Does it sound better in comparison to Scalar Quantizer?*
- *Create plots to illustrate the individual steps of your quantizer*