EE430 2017-2018 Fall, Final Project Demo Evaluation

Student 1: **Student 2:** **Date/Time:**

Subjects	Grade (over 5)	Notes
2. Decimation in time-domain		
a) Minimum requirements: Design and application of any necessary filtering are done properly. Different downsampling rates can be selected. Original and compressed versions of some test signals are compared both visually and in audio.		
b) Technical discussions: effects of different downsampling factors, the need and effects of filtering, commenting on the resulting figures and audio.		
3. Quantization in time-domain		
a) Minimum requirements: Quantizer is implemented properly. Different values for bits/sample can be selected. Time-domain plots for the original, quantized and the error signals are plotted. The original and the quantized signals are compared in audio.		
b) Technical discussions: effects of different values for the bits/sample parameter. For a given bits/sample, can the average power of the error signal be reduced by using a non-uniform quantizer?		
4. Transform coding: DFT, DCT, MDCT		
a) Minimum requirements: Compression system is implemented properly using first by DFT and then by DCT (and by MDCT as a bonus). For each system, block size is a parameter. Effective compression rate can be changed by the user. Original and compressed signals are compared visually and in audio. The performance of DFT and DCT (and MDCT as a bonus) are also compared for the same input signals. The number of coefficients that are set to zero and the compression rate is reported.		
b) Technical discussions: The effects of block size, threshold value, etc. are discussed. The differences in the performances of different methods (DFT, DCT, …) are explained.		
5. MPEG/Audio encoder		
a) Minimum requirements: The parts that are designed by the student are shown. The impulse response and the frequency response of the designed prototype filter is shown. A working system takes a wav file and outputs an mp3 file. Bits/second parameter can be changed. The input and output signals are compared both visually and in audio.		
b) Technical discussions: Discussions about the design and the response of the prototype filter. Discussions about the responses of the modulated filters. Comparisons of the overall performance with the previous methods.		
Overall: Fluency of the presentation. For a given method, the effects of different parameters are clearly demonstrated. The performance differences between different methods are clearly demonstrated. The students are confident in the technical details. Hard-copy report reflects the work that was presented.		