

LING 490 - SPECIAL TOPICS IN LINGUISTICS

Fundamentals of Digital Signal Processing

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Discussion/Demo – week 3

Making a uniform quantiser

1. Decide on the number of levels: L
2. Calculate the largest dynamic range of the signal, i.e. $R = |s_{max} - s_{min}|$
3. Compute the quantisation step/size: $q = \frac{R}{L-1}$
4. Decide whether mid-tread or mid-riser quantiser should be used
 - Depending on if L is even or odd number

Making a uniform quantiser

- If L is even, \Rightarrow mid-riser :
 - Index of quantised value: $i = \left\lfloor \frac{s}{q} \right\rfloor$
 - Quantised value: $s^Q = q \cdot (i + \frac{1}{2})$
- If L is odd, \Rightarrow mid-tread:
 - Index of quantised value: $i = \left\lfloor \frac{s}{q} + \frac{1}{2} \right\rfloor$
 - Quantised value: $s^Q = q \cdot i$