DISTRIBUTED_SOURCE_CODING_USING_SYNDROMES
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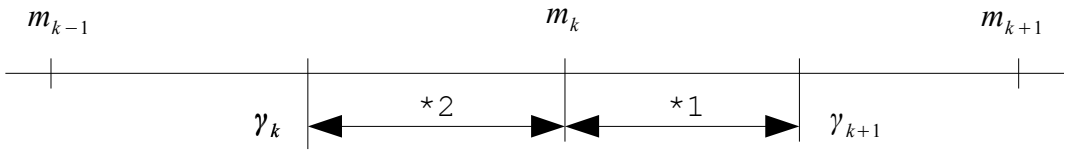
ABOUT: LLOYD_MAX_QUANTIZER_ALGORITHM_V_0_2

$INTERVALS: m_0, m_1, \ldots, m_L$

$LEVELS: \gamma_0, \gamma_1, \ldots, \gamma_L$



*1 QUANTIZED TO γ_k

*2 QUANTIZED TO γ_{k+1}

$$SQ.Err = (m-\gamma)^2$$

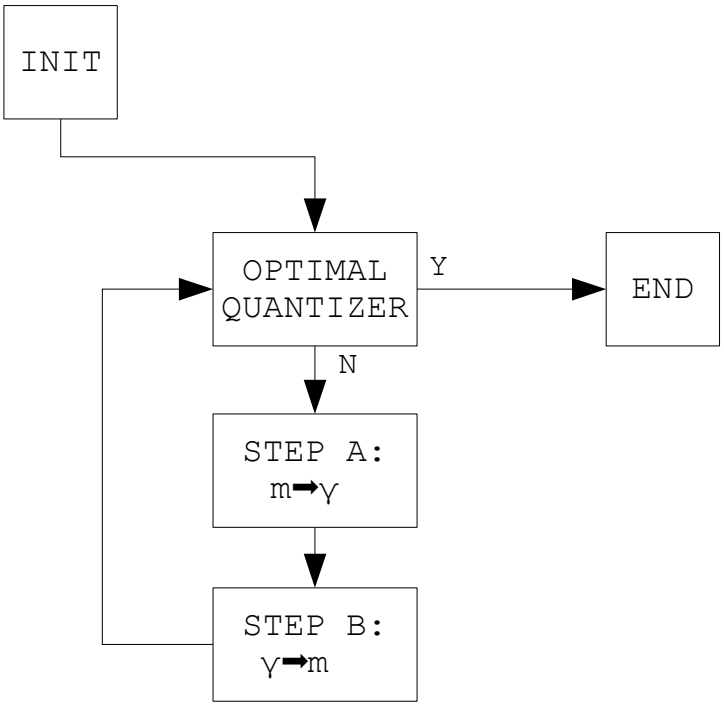
INIT: INTERVALS:{-INF,-6,-4,-2,0,2,6,+INF}
LEVELS:{-7,-5,-3,-1,1,3,5,7}

STEP A: QUANTIZATION INTERVALS → LEVELS

$$\gamma_k = \frac{\sqrt{\frac{\sigma^2}{2\pi}}\left[e^{-\frac{m_{k-1}^2}{2\sigma^2}} - e^{-\frac{m_k^2}{2\sigma^2}}\right]}{qfunc\left(\frac{m_{k-1}}{\sigma}\right) - qfunc\left(\frac{m_k}{\sigma}\right)}$$

STEP B: LEVELS → QUANTIZATION INTERVALS

$$m_k = \frac{1}{2}(\gamma_{k+1} + \gamma_k)$$



ABOUT:
ITERATIVE REPEAT STEPS A, B UNTIL CONVERGENCE TO GET OPTIMAL QUANTIZER.
MINIMIZE THE MEAN SQUARED QUANTIZATION ERROR.