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TITLE: Jayant Quantizer.

function [op] = user\_jayant\_quantizer(void)

% This function encodes the given input array using Jayant Quantizer

% and gives the o/p.

close all;

clear all;

clc;

M = [0.8 0.9 1 1.2 0.8 0.9 1 1.2];

input = [0.1 -0.2 0.2 0.1 -0.3 0.1 0.2 0.5 0.6 0.75];

len = length(input);

delta(1) = 0.5;

ref\_op\_level = [7 6 5 4 0 1 2 3];

output = [];

for i = 1 : len

table(i,1) = (i - 1); %n

table(i,2) = delta(i); %delta\_n

table(i,3) = input(i); %ip

[val,b] = user\_delta(table(i,2),table(i,3)); %Pass 'delta\_n' and 'ip'

table(i,4) = ref\_op\_level(b); %op\_level

table(i,5) = val; %op

delta((i+1)) = (delta(i)\*M((table(i,4))+1)); %op\_level(i,4)

output = [output; table(i,3) val];

end

disp('The output values for corresponding input values using Jayant Quantizer are :');

disp(' input values output values');

disp(output); %Dispaly Output Values

end

function [op,op\_level] = user\_delta(delta,ip)

% This function evaluates the multiplier level value and the output value

% for each of the delta value in the Jayant Quantizer

% inputs : Delta value and Input value

% outputs : Multiplier Level value and Output value

Xmax = delta \* 4;

nXmax = -Xmax;

for j = 1:8

interval(j,1) = nXmax;

interval(j,2) = nXmax+delta;

reconstruction\_value(j) = (interval(j,1) + interval(j,2))/2;

if nXmax<Xmax

nXmax = nXmax + delta;

end

end

for k = 1:8

if(interval(k,1) < ip) && (ip < interval(k,2))

op = reconstruction\_value(k);

op\_level = k;

break;

end

end

end

% OUTPUT :

% The output values for corresponding input values using Jayant Quantizer are :

% input values output values

% 0.100000000000000 0.250000000000000

% -0.200000000000000 -0.200000000000000

% 0.200000000000000 0.160000000000000

% 0.100000000000000 0.128000000000000

% -0.300000000000000 -0.307200000000000

% 0.100000000000000 0.092160000000000

% 0.200000000000000 0.221184000000000

% 0.500000000000000 0.464486400000000

% 0.600000000000000 0.557383680000000

% 0.750000000000000 0.668860416000000