

initialize

p	$=$	1	// stage index
$\hat{\mathbf{x}}_{\text{prev}}$	$=$	$\mathbf{0}$	// reconstructed snippet
$\text{SNR}(p)$	$=$	0	// initial SNR
XDR	$=$	$[M+1 \ M+1 \ \dots \ M+1]$	

1. pick best codevector at p -th stage

$m_{\text{best}} = \arg \min_m \left\| \mathbf{x} - (\hat{\mathbf{x}}_{\text{prev}} + \underbrace{\boldsymbol{\mu}_{p,m}}_{\substack{\text{reconstruction} \\ \text{residual}}} \right\|^2 \quad m=1,2,\dots,M$

// at the p -th stage, find stage
// code-vector $\boldsymbol{\mu}_{p,m_{\text{best}}}$ with
// lowest residual L_2 norm

(Diagram labels: reconstruction, residual, norm of residual)

2. save

$\hat{\mathbf{x}}$	$=$	$\hat{\mathbf{x}}_{\text{prev}} + \boldsymbol{\mu}_{p,m_{\text{best}}}$	//reconstruct using $\boldsymbol{\mu}_{p,m_{\text{best}}}$,
\mathbf{R}	$=$	$\mathbf{x} - \hat{\mathbf{x}}$	//find residual,
$\text{XDR}(p)$	$=$	m_{best}	// save path,
$\text{SNR_dB}(p)$	$=$	$\text{funcCompute_SNRdB}(\mathbf{x}, \hat{\mathbf{x}})$	// find SNR of reconstruction,
$\text{rmse}(p)$	$=$	$\text{funcCompute_rmse}(\mathbf{x}, \hat{\mathbf{x}})$	// find rmse, and

3. further encoding?

passed
further
decoding
rule?

no

return

$\hat{\mathbf{x}}_{\text{prev}}$
 $\text{SNR}(p-1)$
 $\text{rmse}(p-1)$
 $\{\text{XDR}(1), \text{XDR}(2), \dots, \text{XDR}(p-1)\}$

exit

yes

POSSIBLE RULES: further decoding

1. $\Delta \text{SNR} > T, \quad T \in \mathbb{R}$

2. $\{\text{XDR}(1), \text{XDR}(2), \dots, \text{XDR}(p)\} \in \text{XDR}_{\text{trg}}$

exit condition

$p=P?$

yes

exit

no

$\hat{\mathbf{x}} = \hat{\mathbf{x}}_{\text{prev}}$
 $p++$