Formulário de CCD

(2006-2007)

Processamento Adaptativo

$$\varepsilon = E[d^2(n)] - 2\mathbf{c}^T\mathbf{p} + \mathbf{c}^T\mathbf{R}\mathbf{c}$$

$$\nabla = -2\mathbf{p} + 2\mathbf{R}\mathbf{c}$$

$$\mathbf{c}_{opt} = \mathbf{R}^{-1}\mathbf{p}$$

$$\varepsilon_{\min} = E\left[d^2(n)\right] - \mathbf{p}^T\mathbf{c}_{opt}$$

$$\mathbf{c}(n) - \mathbf{c}_{opt} = [\mathbf{Q}(\mathbf{I} - 2\mu\Lambda)^n\mathbf{Q}^T]\left[\mathbf{c}(0) - \mathbf{c}_{opt}\right]$$

$$\nu = \mathbf{Q}^T\mathbf{c}_e = \mathbf{Q}^T(\mathbf{c} - \mathbf{c}_{opt})$$

$$\mathbf{c}(n+1) = \mathbf{c}(n) + 2\mu E\left[e(n)\mathbf{a}(n)\right]$$

$$\mathbf{c}(n+1) = \mathbf{c}(n) + 2\mu e(n)\mathbf{a}(n)$$

$$\mathbf{c}(n+1) = \mathbf{c}(n) + \frac{2\tilde{\mu}}{b + \left\|\mathbf{a}(n)\right\|^2}e(n)\mathbf{a}(n)$$

$$\mathbf{c}(n+1) = \mathbf{c}(n) + 2\mu sign[e(n)]\mathbf{a}(n)$$

$$\mathbf{c}(n+1) = \mathbf{c}(n) + 2e(n)\mathbf{M}(n)\mathbf{a}(n)$$

$$\mathbf{b}(n+1) = \mathbf{b}(n) + 2\mu e(n)\hat{\mathbf{x}}(n-1)$$

$$\mathbf{c}(n) = \mathbf{c}(n-1) + \mathbf{k}(n)e'(n)$$

$$M \approx \mu tr[\mathbf{R}]$$

$$e'(n) = d(n) - \mathbf{c}^T(n-1)\mathbf{a}(n)$$

$$\mathbf{P}(n) = \frac{1}{\alpha}\left[\mathbf{P}(n-1) - \frac{\mathbf{P}(n-1)\mathbf{a}(n)\mathbf{a}^T(n)\mathbf{P}(n-1)}{\alpha + \mathbf{a}^T(n)\mathbf{P}(n-1)\mathbf{a}(n)}\right]$$

$$\mathbf{k}(n) = \mathbf{P}(n)\mathbf{a}(n)$$

$$\mathbf{k}(n) = \frac{\mathbf{P}(n-1)\mathbf{a}(n)}{\alpha + \mathbf{a}^T(n)\mathbf{P}(n-1)\mathbf{a}(n)}$$

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(2006-2007)

Espalhamento espectral

$$S_{SS}(f)=\frac{PT_c}{2}\left[\operatorname{sinc}^2(f-f_c)T_c+\operatorname{sinc}^2(f+f_c)T_c\right] \qquad P_d=Q\left[Q^{-1}(P_{fa})-\frac{P}{N_0}\sqrt{\frac{T}{B}}\right]$$

$$\overline{P}_b=(1-\rho)Q\left(\sqrt{\frac{2E_b}{N_0}}\right)+\rho Q\left(\sqrt{\frac{2E_b}{N_0+N_j/\rho}}\right) \qquad \overline{P}_{b,\max}=\frac{1}{\sqrt{2\pi e}}\frac{1}{2E_b/N_j}$$

$$z_s'=\pm k\sqrt{E_b}\cos\theta' R(t_d') \qquad \left(\frac{S}{N}\right)_0=\frac{2E_b}{P_jT_c}=\frac{2T_b}{T_c}\left(\frac{S}{N}\right)_i \qquad \frac{P_j}{P}=\frac{PG}{E_b/N_0}$$

$$P_b=Q\left(\sqrt{\frac{2E_b}{N_0+N_j}}\right) \qquad P_b=\frac{1}{2}e^{-\frac{E_b}{2(N_0+N_j)}} \qquad P_b=Q\left(\sqrt{\frac{2P_sT_b}{N_0+(a+K-2)P_sT_c}}\right)$$

$$PG=T_b/T_c \qquad PG=2^{j+k} \qquad PG=2^{j+k}K \qquad t(n)=2^{\lfloor (n+2)/2\rfloor}+1 \qquad s(n)=2^{n/2}+1$$

$$S_{Gold}=\left\{\mathbf{a},\mathbf{b},\mathbf{a}\oplus\mathbf{b},\mathbf{a}\oplus T\mathbf{b},\ldots,\mathbf{a}\oplus T^{N-1}\mathbf{b}\right\} \qquad S_K=\left\{\mathbf{a},\mathbf{a}\oplus\mathbf{b},\mathbf{a}\oplus T\mathbf{b},\ldots,\mathbf{a}\oplus T^{\left(2^{n/2}-2\right)}\mathbf{b}\right\}$$

n	Polinómios primitivos (menor potência à direita)
2	7
3	13
4	23
5	45, 75, 67
6	103, 147, 155
7	211, 217, 235, 367, 277, 325, 203, 313, 345
8	435, 551, 747, 453, 545, 537, 703, 543
9	1021, 1131, 1461, 1423, 1055, 1167, 1541, 1333, 1605, 1751, 1743, 1617, 1553, 1157
10	2011, 2415, 3771, 2157, 3515, 2773, 2033, 2443, 2461, 3023, 3543, 2745, 2431, 3177

$$Q(x)=\frac{1}{2}erfc\left(\frac{x}{\sqrt{2}}\right)$$