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Solving Quadratic Programming
T1 = 1
T2 =-1
T3 =-1
T4 =1

X1=[0,0] , X2=[0,1] , X3=[1,0], X4=[1,1]

Using kernel function as $K(x,y)=(1+x.y)^2$
With $X=[x_1, x_2]$

Inner product kernel in terms of monomials of different orders as follows
$K(X_i, X_j) = 1+ X_{i1}^2.X_{j1}^2 + 2X_{i1}.X_{i2}.X_{j1}.X_{j2} + X_{i2}^2.X_{j2}^2 + 2X_{i1}.X_{j1} + 2X_{i2}.X_{j2}$
$\phi(X) = [1, x_1^2, \sqrt{2x_1.x_2}, x_2^2, \sqrt{2x_1}, \sqrt{2x_2}]^T$

$$\max_{\propto}\{\sum_{j=1}^{4} \propto_j - \frac{1}{2}\sum_{i=1}^{4}\sum_{j=1}^{4} T_i.T_j.\propto_i.\propto_j\ (1+x_i.x_j)^2\}$$

Such that

$$\propto_j \geq 0 \quad j = 1,2,3,4$$
$$\propto_1 - \propto_2 - \propto_3 + \propto_4 = 0$$

Make above maximization problem into minimization problem to use quadprog tool in matlab to solve

$$\min_{\propto}\{\frac{1}{2}\sum_{i=1}^{4}\sum_{j=1}^{4} T_i.T_j.\propto_i.\propto_j\ (1+x_i.x_j)^2 - \sum_{j=1}^{4}\propto_j$$

Hessian Matrix for above problem

Therefore we can transform this problem into this form

$$\frac{1}{2}X^T.H.X + f.X$$

$$H = \begin{matrix} 1 & -1 & -1 & 1 \\ -1 & 4 & 1 & -4 \\ -1 & 1 & 4 & -4 \\ 1 & -4 & -4 & 9 \end{matrix}$$

F = -1 -1 -1 -1