Solution

the histogram (hit/hough/accumulation) matrix is constructed:

	-3	-2	-1	0	1	2	3
0							
$\pi/4$							
$\pi/2$							
$3\pi/4$							

For each point on a strong edge we find the lines that it may belong to:

For the point P1(2,2) and q :

0: r =2*cos(0)+2*sin(0)=2

==> line [2,0]

$\pi/4$: r =2*cos($\pi/4$)+2*sin($\pi/4$)=2.8284~3

==> line [3,$\pi/4$]

$\pi/2$: r =2*cos($\pi/2$)+2*sin($\pi/2$)=2

==> line [2,$\pi/2$]

$3\pi/4$: r =2*cos($3\pi/4$)+2*sin($3\pi/4$)=0

==> line [0,$3\pi/4$]

So the histogram matrix is updated as follows:

	-3	-2	-1	0	1	2	3
0						/	
π/4							/
π/2						/	
3π/4				/			

Finding the possible lines and updating the histogram matrix for the remaining 6 points, we obtain:

	-3	-2	-1	0	1	2	3
0		//			/	////	
π/4	/			///	/	/	/
π/2		//	//		/	//	
3π/4	/	/	//	//			/

Identifying the two lines with the maximum number of hits:

Line 1: $[r_1,q_1]=[2,0]$ Line 2: $[r_2,q_2]=[0,\pi/4]$

Examining the detected lines on the image with the strong edge points, we obtain agreeable results: