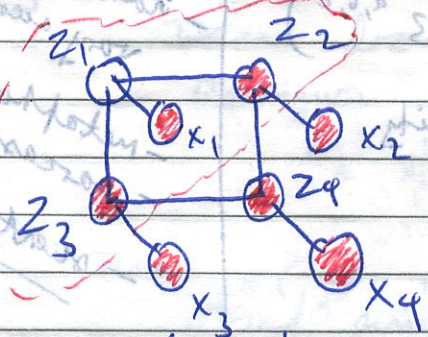


Helwe

[EEL709]

(Image denoising)



$z_i \in \{0, 1\}$ (B/W)

$x_i \in \{0, 1\}$ (B/W)

Minimal cliques:
 (z_1, z_2) (z_1, z_3)

z_1	x_1	$\phi(z_1, x_1)$
0	0	1
0	1	1
1	0	1
1	1	5

z_1	z_2	$\phi(z_1, z_2)$
0	0	1
0	1	1
1	0	1
1	1	10

PC z_1 | all else

$= P(z_1 | x_1, z_2, z_3)$

Suppose $z_2=1, z_3=1$

$$P(z_1 | x_1) = \frac{P(z_1, x_1)}{P(x_1)} \quad | \quad z_2=1, z_3=1$$

(=)

$$P(z_1, x_1) \quad | \quad z_2=1, z_3=1$$

~~includes $P(z_2=1, z_3=1)$~~

$$= \phi(z_1, x_1) \cdot \phi(z_1, z_2) \cdot \phi(z_2, z_3)$$

x_1	z_1	$P(z_1, x_1) (\alpha)$
0	0	5. (10) (10) 1.1. = 5
0	1	1. 10. 10 = 100
1	0	1. 1. 1. = 1
1	1	5. 10. 10. = 500

(for =) 606

$P(x_1)$

0	105 / 606
1	501 / 606

$$\Rightarrow P(z_1=1 | x_1=1) = \frac{500/606}{501/606} = \frac{500}{501}$$

$$P(z_1=0 | x_1=1) = \frac{100/606}{501/606} = \frac{1}{501}$$

$$P(z_1=1 | x_1=0) = \frac{100/606}{105/606} = \frac{100}{105}$$

Block noise in FA

$$P(z_1=0 | x_1=0) = \frac{5}{105}$$