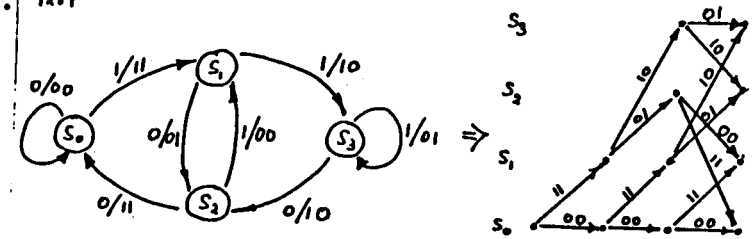
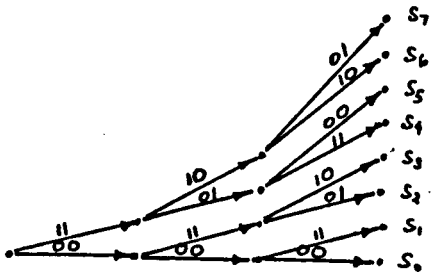
EE 6082 HW5

1. 12.1

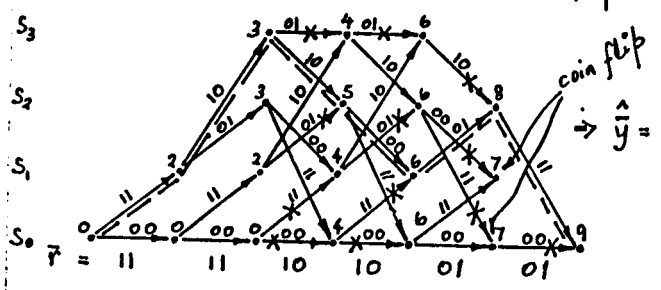


2. 12.2



3. Using the maximizing metrics

$M(r_i^{(j)} \mid y_i^{(j)})$	$y^{(j)} = 0$	1
$r^{(j)} = 0$	1	0
1	0	1



$\Rightarrow \hat{\vec{y}} = 11\ 10\ 10\ 00\ 01\ 11.$

4. If we assume independent Gaussian noise has corrupted bits, we use the Gaussian metric (bit)

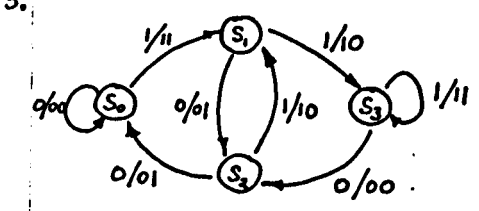
$$M(r_i^{(j)} \mid y_i^{(j)}) = -(r_i^{(j)} - y_i^{(j)})^2.$$

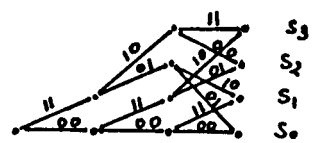
So we can choose to minimize

$$\sum_i (r_i^{(j)} - y_i^{(j)})^2$$

This gives $\hat{\vec{y}} = 11\ 10\ 10\ 11\ 11\ 01\ 11.$

5.





$d_{free} = 4$

(follow $S_0 \to S_1 \to S_2 \to S_0$)