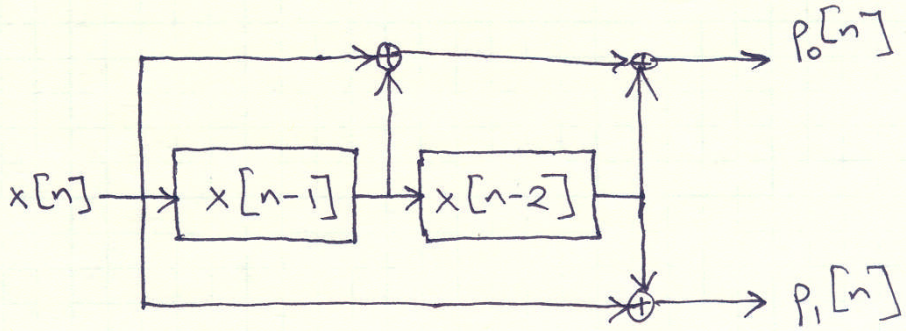
George Verghese
verghese@mit.edu

6.02
10/7/10

Rec. 8

(We covered 1, 2, 3, 5 below. Item 4 is for next time: Viterbi algorithm)

Consider the following convolutional coder:



1. Draw the state transition diagram that goes with this.

2. Draw the associated trellis, assuming it's known that the system starts in the 00 state at time $n=0$, and ends in the 00 state at time $n=6$.

   $x[n-1]$ $x[n-2]$

3. If the received sequence is

   00 01 01 10 01 10

   and if the 'cost' of a branch (on the trellis) is the associated Hamming distance between what was received and what is sent when that branch is traversed, label each branch with its cost (metric).

4. Find the optimal (i.e., least cost) path from the start node to every intermediate node and the end node, assuming the path cost (or metric) = sum of costs of branches on the path

5. What is the minimum Hamming distance for the codewords associated with the trellis? i.e. the code