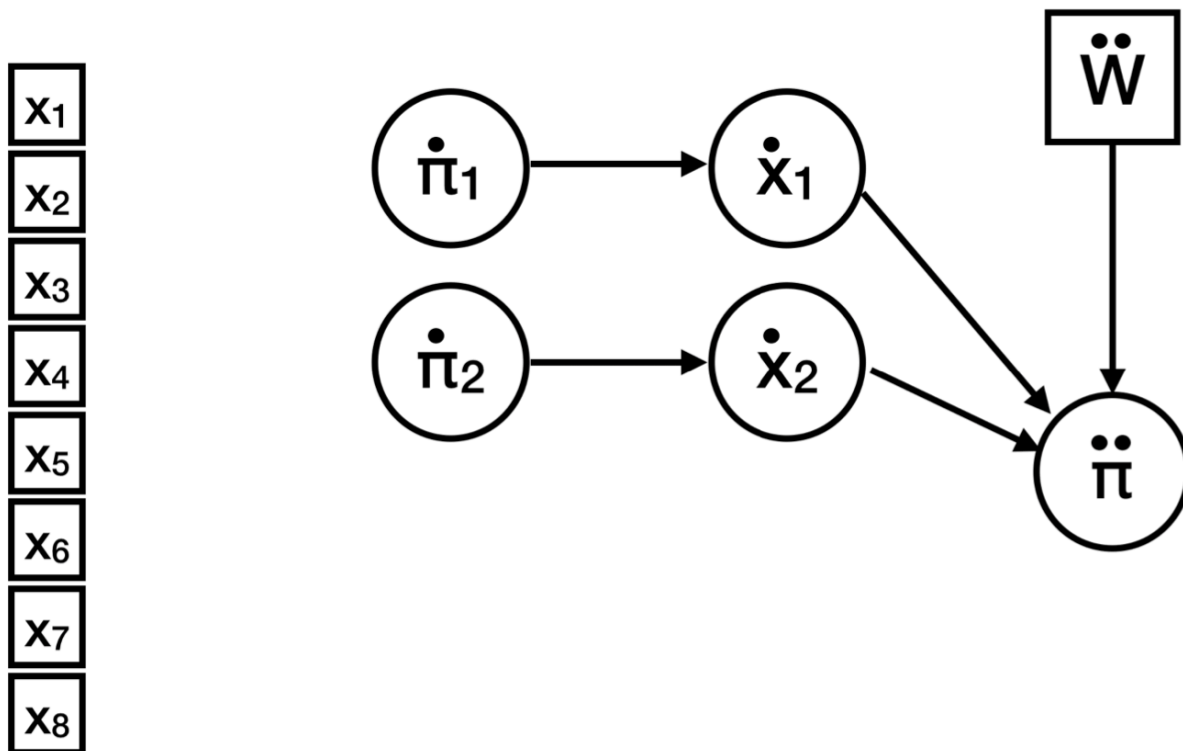


CSCI 378 HW: Padding and Pooling

We want to create a convolutional neural network (CNN) that can classify bitstrings of length 8, e.g. 01001011 or 10111011 or 00011100.

- (a) Complete the following causal diagram (fill in missing arrows and nodes) to create a CNN with two kernels (c and c') of size 3 and stride 4. Assume there is no padding and that π_1 and π_2 are both scalars. In the diagram, x_i is the i th bit in the input bitstring.



- (b) **Multiple choice:** What is the output $\ddot{\pi}$ when given input bitstrings 01100011 and 01110010?
 (i) they are equivalent, (ii) one is the negative value of the other, (iii) it cannot be determined with the information given.
- (c) **Multiple choice:** What is the output $\ddot{\pi}$ when given input bitstrings 01100011 and 10011100?
 (i) they are equivalent, (ii) one is the negative value of the other, (iii) it cannot be determined with the information given.