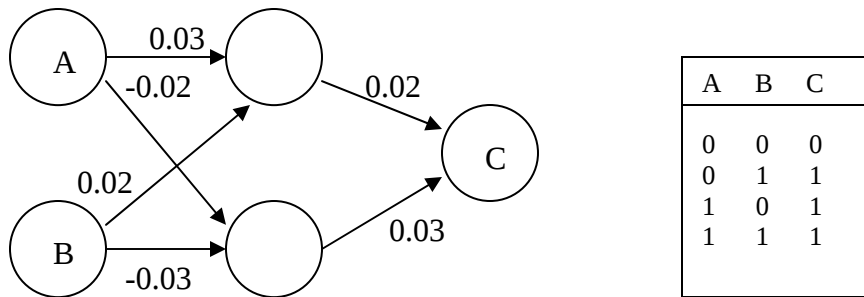


CS 760
Homework 2
Assigned Mon, Oct 11
Due Wed, Oct 18

- Given the ANN below, perform one round of backpropagation with the four examples below. Show the revised weights on all arcs after processing each example. Assume the learning rate parameter is 0.05.



- Given the Bayes net below, show the result of **three** cycles of the EM algorithm to update the CPTs, using two data points: one with A=true, B=true, C=true, and D missing, and one with A=true, B=false, C missing and D = true. Be sure to show your intermediate values (for missing variables, pseudocounts and CPTs) and your final CPT values.
- Given the same Bayes net, show the result of **two** cycles of Gibbs sampling (where a cycle resamples each missing variable, one at a time) to update the CPTs, using two data points: one with A=true, B missing, C=true, and D missing, and one with A=true, B=false, C missing and D = true. Resample the missing variables in order top to bottom (finish the first data point before starting the second), left to right within a data point. Show all your steps and show your final CPT values. Please begin by setting all missing variables to True and immediately updating parameters. Please assume that the (pseudo)random numbers you receive, beginning with the earliest, are: 0.124, 0.798, 0.643, 0.983, 0.802, 0.214, 0.409, 0.555, 0.314, 0.798, 0.216, 0.458.. You won't need to use all of these.

