Group 6: Project 3

1) Crick & Mitchison (1983) suggested that dream sleep might result in unlearning of associations. Ackley, Hinton & Sejnowski (1985) developed the "Boltzmann machine" model that uses a learning rule consisting of "wake" (learning) and "sleep" (unlearning) phases. Show how this algorithm could produce some of the properties of dream sleep discussed by Crick & Mitchison.

2) Discuss the dream sleep hypothesis and its computational implementation in light of recent work on the function of dream sleep (Stickgold et al., 2001).

References:

Ackley, D., Hinton, G., & Sejnowski, T. (1985). A Learning Algorithm for Boltzmann Machines. Cognitive Science, 9, 147-169.

Crick, F., & Mitchison, G. (1983). The function of dream sleep. *Nature, 304*, 111–114.

Stickgold, R., Hobson, J.A., Fosse, R., Fosse, M. (2001). Sleep, Learning, and dreams: off-line memory reprocessing. *Science, 294*, 1052-1057.