

Assignment: A8

Due: 13 December 2012: **This assignment is not required, but may be used to replace an earlier one with a worse grade.**

You are to explore the use of Markov Chain Monte Carlo as the basis for problem described in the paper [btg-pailisn-04.pdf](#) on the class [Link to Course Info and Documentation](#). The goal is to compute the probability that the friendly agent is surrounded by enemy agents given the number of enemy agents, the friendly agent's location, and the location and measurement values of a set of sensors. Several aspects of this approach deserve careful attention:

- **Method Parameters**: explore a range of values for:
 1. The number of trials
 2. The percentage of discarded trials
 3. The probability of sensor measurement correctness
- **Setup Issues**:
 1. Study how the number of enemy agents impacts performance
 2. Study how the number and location of sensors impacts performance
- **Data Management**:
 1. Describe how you select training and testing data

In addition, the results need to be presented in a strong statistical framework; this means computing statistics (e.g., mean, variance) over several trials (how many?), and showing confidence intervals.

Finally, the analysis and interpretation are the essential parts of the report; use these to present your findings, understanding and remaining problems.

In this assignment, the major goal is to explore the use of Markov Chain Monte Carlo algorithms.