

Assignment A5: Contract Net

CS 6380, Fall 2014

Assigned: 7 October 2014

Due: 23 October 2014

For this problem, handin a lab report pdf (include name, date, assignment and class number in pdf) which studies the use of contract net as a mechanism for distributed problem solving. You are to design and implement a version of contract net to monitor temperatures in a region and develop a global interpolation function for the temperature. This requires a *monitor task* with a manager agent which contracts a distributed set of agents to report temperature values from various regions. In addition, if sensors are sparsely distributed in some parts of the region, then the monitor agent contracts with mobile robots to distribute sensors to those areas. You are to develop a set of task descriptions, bidding specifications, etc. to solve this problem. Assume that there:

- is one monitor agent
- are several mobile agents capable of transporting sensor agents
- are several fixed sensor agents (their locations are randomly assigned upon startup)
- are several transportable sensor agents (also randomly located upon startup).

You should study the performance characteristics of this system in terms of costs (e.g., number of messages sent, distance of transported sensors, error in temperature model, etc.). Assume the temperature is a 2D Gaussian function with maximum value 100 degrees, and with minimum temperature 0 degrees.

Use the code provided for Assignment 5 as the basis for your agents and the contract network development.

You should handin the report pdf as well as the Matlab code used in the study. The code should conform to the style requested in the class materials.

In addition, please turn in a hardcopy of the report in class before the start of class on October 23, 2014.

Write a lab report in the format (please do not deviate from this format!) described in the course materials.