Problem Set 6, Part b

Due: Wednesday, May 17, 2006
Problem sets will be collected in class. Please hand in each problem on a separate page, with your name on it.

Reading

Compulsory protocols   Hatzis, Pentaris, et al.: Fundamental control algorithms in mobile networks
      Chatzigiannakis, et al.: Efficiency of distributed communication and control algorithms
      Chatzigiannakis, et al.: An efficient communication strategy for ad-hoc mobile networks
      Chatzigiannakis, et al.: An efficient routing protocol for hierarchical ad-hoc mobile networks
Virtual nodes   Dolev, Gilbert, et al.: Virtual mobile nodes for mobile ad-hoc networks
      Dolev, Gilbert, et al.: Timed virtual stationary automata
      Dolev, Lahiani, et al.: Self-stabilizing node location and routing
Data aggregation   Nath, Gibbons, et al.: Synopsis diffusion for robust aggregation in sensor networks
      Shrivastava, Buragohain, et al.: New aggregation techniques for sensor networks
      Patt-Shamir: A note on efficient aggregate queries in sensor networks
      Angluin, Aspnes, et al.: Computation with mobile finite state sensors
      Angluin, Aspnes, et al.: Stably computable properties of network graphs

Reading for next week

Atomic memory   Lynch, Shvartsman: RAMBO: reconfigurable atomic memory for dynamic networks
      Gilbert, Lynch, Shvartsman: RAMBO II: Rapidly reconfigurable atomic memory for dyn. nets.
Motion planning: Li, Rus: Navigation protocols in sensor networks.
      Woo, Tong, Culler: Rreliable multihop routing in sensor networks
      Walter, Welch, Amato: Distributed reconfiguration of metamorphic robot chains
      Defago, Konagaya: Circle formation for oblivious anonymous unoriented mobile robots
      Flocchini, Prencipe, et al.: Gathering mobile robots with limited visibility
      Lynch, Mitra, Nolte: Motion coordination using virtual nodes
Intelligent highways: Sun, Garcia-Molina: Using ad-hoc inter-vehicle network for regional alerts
      Kan, Pande, et al.: Event dissemination in high mobility ad-hoc networks.

Problems

For this final homework assignment, we are not asking any specific questions about this week's readings. Instead, we would like you to think generally about everything we have read and discussed this term, and give some of your own thoughts about all of this, with respect to the original goals of the course, which were: to determine what a theory for mobile ad hoc networks should look like, and to define interesting research directions.

You can write about anything you like. For instance:

Which of the papers we've discussed seem to you to be most fundamental for the area? Which don't give any useful insights, either theoretical or practical?

Which of the problems we've discussed do you think already have good practical and theoretical solutions? Which problems are still open?

Can you think of other important problems that we haven't discussed but that are also important for a theory for mobile ad hoc networks?

If you were going to work on research in theory for mobile ad hoc networks, which problems would you choose and why? How would you approach them?