Research on the method of creating Angle Table using the directional antenna

Masanori Kuzuya (110039)

School of Information Science,
Japan Advanced Institute of Science and Technology

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Recently, Communications technology has been developed rapidly a mobile node such as a cellular phone and a PDA has always in our life. An ad hoc network is a collection of wireless mobile nodes dynamically forming a temporary network without the use of any existing network infrastructure or centralized administration. Due to the limited transmission range of wireless network interfaces, multiple network "hops" may be needed for one node to exchange data with another across the network. An ado hoc network cannnot respond with the technology of a conventional network. The development of the new way of communicating is very much being researched to cope with a communication difficulty and a resource problem. It was assumed until now that an ad hoc network uses a nondirectional antenna (all direction antennas). However, the directional antenna for ad hoc networks is beginning to be developed recently. The advantage of a directional antenna in an ad hoc network is to reduce interference of an electric wave with a directional antenna. The number of simultaneous transmissive communication in a network can increase in connection with it, and a throughput can be increasd. Clearly if we use directional antenna, it is necessary to know a position information on an adjacent node. The position information divides the communication range of a node (circular) into 12 equally at a sector, and it records adjacent node information for every domain of the divided equally. This information iscalled Angle Table.

Each node scans 360 degrees using a directive beam arbitrary cycles. And the node which received the beam writes the information in Angle Table. However, this approach may have much time.

Hence we propose protocols that outputs the Angle Table. The proposal protocols include the following two phase.

Position Phase: The turn which attaches a time lag and teaches its position by 360° scan

Collision Phase: A scan shows by unreceivable 360°.

Our algorithm is as follows.

Position → Collision → Position → Collision $\cdots$

According to the computer simulation, it turns out that the direction of our algorithm is at high speed.