

HMT:A Hybrid Mesh Tree Algorithm in Forming Bluetooth Networks

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Abstract

In this letter, a new scatternet formation algorithm called hybrid mesh tree for Bluetooth ad hoc networks was proposed. The hybrid mesh tree constructs a mesh-shaped topology in one dense area that is extended by tree-shaped topology to the other areas. First, the hybrid mesh tree uses a designated root to construct a tree-shaped subnet, and then propagates a constant k in its downstream direction to determine new roots. Each new root then asks its upstream master to start a return connection procedure to convert the first tree-shaped subnet into a mesh-shaped subnet. At the same time, each new root repeats the same procedure as the designated root to build its own tree-shaped subnet until the whole scatternet is formed. Simulation results showed that the hybrid mesh tree achieved better network performance than Bluetree and generated an efficient scatternet configuration for various sizes of Bluetooth scatternets.

Keyword : Bluetooth, Ad hoc networks, Scatternet formation