An Enhanced Minimum Spanning Tree Algorithm for Achieving Collision-Free Transmissions in Massive IoT Networks

Chiuyuan Chen
Department of Applied Mathematics
National Yang Ming Chiao Tung University

Abstract

The original Prim's algorithm forms a minimum spanning tree for a connected weighted graph by adding a closest vertex to the current subtree at each step. In this work, we enhance the original Prim's algorithm so that it can be used to partition massive IoT networks to achieve collision-free receiver-initiated data collection. In particular, two device mobility patterns are considered and two spanning forest based algorithms with four different flavors of cluster partitioning are proposed. (This is a joint work with Chia-An Hsu, Chung-Hsiang Tsai, Frank Y. Li, and Yu-Chee Tseng.)