An Enhanced Dynamic Framed Slotted ALOHA Anti-Collision Method for Mobile RFID Tag Identification

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Abstract

In the past decade, many researches focused on how to identify static tags efficiently in RFID systems. How to identify the mobile tag, therefore, has not received enough attentions. However, many mobile tag applications have been realized in our life, one case of these applications is that a passenger holds a RFID ticket to pass a gate and then enters a station in Taipei MRT system. It is necessary for further exploring how to identify the mobile tags effectively. Different with the existing mobile tag identification methods are tree-based methods, we proposed an ALOHA-based mobile tag anti-collision method – Enhanced dynamic framed slotted ALOHA for mobile tags (MT-EDFSA) to identify mobile tags. We compared the performance of MT-EDFSA with those of the other methods – MT-DFSA and DFSA in terms of throughput and identification time. The results show that MT-EDFSA has the highest throughput and the shortest identification time among MT-EDFSA and the others two methods.

Keyword：mobile tag identification, anti-collision, DFSA, RFID