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Target tracking with interacting multiple-model algorithm in multi-sensor multimedia networks

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Wireless sensor network in industrial environment (denoted IWSN) has data delivery timing constraint. Due to the dynamic routing and transmission collision, the data delivery time is unpredictable. In this paper, a proactive routing which constructs the sensor nodes into a logical circular chain (i.e., ring topology) with token-based transmission is developed to avoid data collision and to provide bounded transmission delay. A traveling salesman problem (TSP) with heuristic algorithm and linear programming modeling with simulated anneal algorithm are applied to construct a load-balanced logical circular chain in IWSN. A Ping-Pong token-pass scheme is applied to prolong the network lifetime. The simulation results reveal that the linear programming with Ping-Pong token-pass scheme has the best performance in load balance and network lifetime.

Biography

Chin-Der Wann received his PhD degree from The Pennsylvania State University, University Park in Electrical Engineering. From 1995 to 2011, he had been with the Centre for Wireless Communications, Singapore, the Computer and Communications Laboratory at ITRI Taiwan, and other educational institutions, respectively. He joined the Department of Computer and Communication Engineering at National Kaohsiung First University of Science and Technology in 2011, and is currently an Associate Professor and Director of Undergraduate Honors Program of Engineering. His current research interests include multi-sensor data fusion, signal processing, distributed detection and estimation, and wireless communications.

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