

Investigation of Features for Classification RFID Reading Between Two RFID Reader in Various Support Vector Machine Kernel Function



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Abstract Radio Frequency Identification (RFID) is the primary technology for tripartite logistics information and automation. The RFID-based logistics system able to increase logistic operating capacity and improve the efficiency of worker to minimize the logistic operation failure. However, the precise location of the RFID device is still a problem in a specific area due to the interference of the radiofrequency. An indoor positioning using RFID technology based on various kernel function of the support vector machine (SVM), and feature extraction are proposed to determine the location of the goods. SVM classifier is utilized the acquire received signal strength indicator (RSSI) data for trained the model from the indoor moving objects as well as relationship between RSSI and distance is constructed to boost RSSI accuracy. Instead, the distance verses RSSI algorithm is used to determine the objects to be located based on the distance of the tag to be located to each reader. The feature of RSSI is extracted to nine single statistical features and three combinations of different statistical features for evaluated the classification performance in different kernel functions of the SVM classifier. The Polynomial-SVM model is capable of delivering a classification accuracy of 84.81 and 20.00% of the error rate in test data by using the function MIN extracted. The experimental results show that the algorithm improves the positioning accuracy of indoor localization with select the suitable feature combination.

Keywords Radio frequency identification · Support vector machine · Feature extraction · Kernel function

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