

# The Identification of RFID Signal Using $k$ -Means for Pallet-Level Tagging

Chun Sern Choong, Ahmad Fakhri Ab. Nasir, Anwar P. P. Abdul Majeed, Muhammad Aizzat Zakaria,  
Mohd Azraai Mohd Razman

*Innovative Manufacturing, Mechatronics and Sports Lab (IMAMS), Faculty of Manufacturing & Mechatronic Engineering  
Technology, University Malaysia Pahang, Pekan; Malaysia*

## Abstract

Radio Frequency Identification (RFID) applications are becoming increasingly popular in a myriad of areas, and therefore, an effective RFID technology-based location would offer a much-needed additional in tracking system. This research focuses on the identification of the location of passive RFID at the pallet-level, which uses the RFID signal strength to cluster the pallet level tagging through  $k$ -means. A comparison between the actual and the predicted level attained via the  $k$ -means clustering is evaluated through a multi-class performance metrics. It was demonstrated from the investigation that the  $k$ -means model is capable of achieving a classification accuracy of 69% and 67% for the train and test data, respectively.

## Keywords

RFID Pallet-level tagging Unsupervised machine learning  $K$ -means