

Machine Learning Based Mobile Robot Localisation in Indoor Environments

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The mobile robot Indoor Positioning Systems (IPS) are widely used in the automation industry to find the location of moving robots in indoor environments. Existing IPS are expensive, and designs are complex. Moreover, the requirement for further installation work seems to be a common problem in these applications. This paper proposes a simplified localization technique based on the Received Signal Strength (RSS) by employing Machine Learning (ML) algorithms. The collected Received Signal Strength Indicator (RSSI) data from three different anchor nodes in the testbed has been trained using supervised learning algorithms to estimate the mobile robot's geographical location. During the experiment, several algorithms were investigated, and the Decision Tree Regression (DTR) algorithm outperformed with 28.84 RMSE and 0.9 R²

Keywords: Indoor Positioning Systems (IPS), machine learning, IoT, RSSI, mobile robots