INTISARI

Global Positioning System atau yang bisa disingkat dengan GPS merupakan teknologi yang diciptakan dengan tujuan untuk menentukan lokasi seseorang secara presisi. Namun, GPS memiliki kelemahan ketika melacak lokasi seseorang dalam ruangan tertutup karena ketergantungan kepada satelit yang memancarkan sinyal. *Indoor localization* merupakan solusi terhadap permasalahan ini sebab *indoor localization* memanfaatkan sinyal yang dapat digunakan di dalam ruang tertutup seperti *Wi-Fi*, dan *Bluetooth Low Energy* (BLE). BLE mengandalkan *beacons* untuk menyebarkan sinyal *Bluetooth* yang kemudian ditankap oleh gawai dari pengguna. Sinyal dari *beacons* tersebut dapat dianalisis menggunakan berbagai cara seperti *Fingerprint Feature Extraction*, *Weighted Centroid Localization*, dan *Neural Network*.

Penulis akan menggunakan *neural network* dalam menganalisis sinyal BLE yang kemudian akan menjadi titik koordinat pada hasil akhir. Sinyal BLE diambil dengan scenario ruangan tertutup dan menggunakan enam *beacons* untuk memancarkan sinyal, dan tiga gawai untuk mengumpulkan sinyal tersebut. Kemudian sinyal yang didapat akan diolah menggunakan *neural network* sehingga mendapatkan hasil berupa koordinat x dan y. Hasil dari penelitian ini menunjukkan bahwa metode *neural network* dapat digunakan pada *indoor localization* dan dapat diimplementasikan dalam kehidupan nyata.

ABSTRACT

The Global Positioning System, abbreviated as GPS, is a technology created with the purpose of determining someone's location with precision. However, GPS has a limitation when tracking someone's location indoors due to its dependence on satellites that transmit signals. Indoor localization serves as a solution to this issue, as it utilizes signals that can be used indoors, such as Wi-Fi and Bluetooth Low Energy (BLE). BLE relies on beacons to broadcast Bluetooth signals, which are then captured by users' devices. The signals from these beacons can be analyzed using various methods, such as Fingerprint Feature Extraction, Weighted Centroid Localization, and Neural Network.

The author will use a neural network to analyze BLE signals, which will then become coordinates in the final result. BLE signals are collected in a closed room scenario using six beacons to transmit signals and three devices to gather those signals. Subsequently, the obtained signals will be processed using a neural network to obtain results in the form of x and y coordinates. The findings of this research indicate that the neural network method can be used for indoor localization and implemented in real-life situations.