

ABSTRACT

Location tracking information technology is needed in technological developments, the location tracking is the Global Positioning System (GPS). However, GPS signal is difficult to track and capture a location in indoors, therefore a technology called Indoor Localization System was created for indoor location tracking, the technology used for indoor localization uses Bluetooth Low Energy (BLE).

In this final project, we will design and implement an indoor location mapping in the form of an application based on the android operating system, named "Discover-U". This application system will be designed using android to check the location of smart stick user connected to the BLE and the data captured by BLE stick user will be sent to the MQTT server. The Discover-U application applies Advanced Encryption Standard (AES) data encryption algorithm to keep user data safe.

Results of functionality testing Discover-U application show that the application runs well. QOS test results from the Discover-U application with an average delay of 602ms, throughput of 1,214 Kbps, and packet loss of 0%. The results of testing AES-192 cipher text can work well, testing security level with the Avalanche effect with an average of 55%, and the average running time of the AES-192 encryption process is 0.002s.

Keywords: Android, Indoor Localization System, Bluetooth Low Energy, Internet of Things, AES, MQTT, Cloud Server.