

ABSTRACT

Importance of the location of a person to be known in the building is an issue that there is no solution yet. This research is expected to help people to know their position and which direction should be taken inside a building. WiFi is selected as a parameter for positioning because almost every building has already installed WiFi.

WiFi Positioning System (WPS) is a system for determining the position of user based on the WiFi signal. Previous research has applied WPS in immobile state. Navigation system need a system that can display the users on the move, because users should know where they are currently while moving to its destination. The system uses trilateration technique to fulfill that need, because this method can display the user's position in real time. The parameters used for this method is Received Signal Strength Indicator (RSSI) which obtained from the WiFi signal strength.

Tested parameters in this research is computational time and accuracy of the system. Based on application testing on the 2nd floor of N building University Telkom, in case the user does not move, RSSI data that used has a margin of error 3 dB from the filter. From RSSI conversion to distance obtained an average difference of 76.315 cm with the original distance. There is a difference of ± 2 dB from the filter compared with the data from the Free Space Path Loss Model. In positioning test obtained an average of error ± 2.260556 meters from the original coordinates of the user. In the case the user moves, the positioning results obtained error occurred 3 times in 10 times checking position of the room, the level of accuracy obtained was of 70%. In navigation feature, this applications have a 100% accuracy rate. This application has the computing time with an average time of 1.0035 seconds.

Keywords : WiFi Positioning System, Real time, Trilateration, A* Algorithm, RSSI, Navigation