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A SURVEY OF MEASUREMENT TECHNIQUES FOR LOCALIZATION AND POSITIONING

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ABSTRACT

Positioning of an unknown object and localization of a radio source has become a necessity for civilian and defence applications. With the increase in number of positioning applications many position measurement techniques have emerged. These include the Time of Arrival (TOA), Time Difference of Arrival (TDOA), Received Signal Strength (RSS) and Angle of Arrival (AOA) techniques. However, there exists considerable confusion regarding the measurement technique to be chosen for a specific application. Hence, the aim of this paper is to explain without any ambiguity, the applications for which each measurement technique is intended. A basic understanding of each technique is provided. This is followed by implementation of the measurement techniques using Genetic Algorithm and Least Squares positioning algorithms. This paper makes use of the simulated data for the implementation of RSS and AOA techniques and real time data for implementation of TOA and TDOA techniques. The real time data used in the performance evaluation is collected from the dual frequency GPS (DFGPS) receiver located at Andhra University, Visakhapatnam.

KEYWORDS: Global Positioning, Source Localization, TOA, TDOA, RSS, AOA

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