ABSTRACT

DESIGN OF 2-D SOUND LOCALIZATION BASED ON TIME DIFFERENCE OF ARRIVAL

Bachelor Degree Final Project

By

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ELECTRICAL ENGINEERING STUDY PROGRAM

Localization or determining the location of a wave source has been, and still remains, and active field in research due to its immense in many fields, such as robot self localization, vibration analysis at the core of a transformer, determining location of cell-phone, and modern day Global Positioning System (GPS).

This final project presents design of a system for determining location of a form of a wave source, a sound with constant frequency. The formula to find position of the source is based on equation of circle in Cartesian coordinate and the relations between radius differences of the circles and time difference of arrival (TDOA) of the signals received by a set of microphones.

For that purpose, several experiments were conducted to get the relations between radius differences of the circles and time difference of arrival (TDOA) and finally create a system whose can determine the position of sound source with constant frequency in 2-D Cartesian coordinate.

Keywords: sound localization, time difference of arrival.