

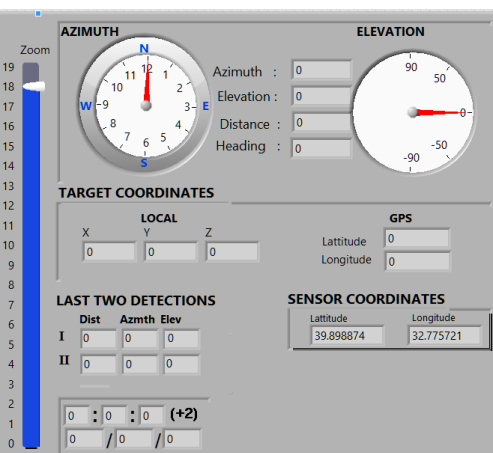
ACOUSTIC DIRECTION FINDING WITH MICROPHONE ARRAYS: BOARD LEVEL APPROACH

Build your high tech laboratory starting from an expert level using state-of-the-art embedded processing platforms. ATARGET has developed both the hardware and software solutions for Acoustic Direction Finding (ADF) systems using NI cots products. This open source and reconfigurable environment opens up several opportunities for engineering students. ATARGET supplies turn-key laboratory for ADF system which is an investment that would return its benefits for many years without losing its value. The hardware platform can be modified/renewed if it is desired without changing the software thanks to NI devotion to compatibility. ATARGET ADF systems are used in different applications including gunshot detection systems, artillery detection systems, security systems, etc.



USER FRIENDLY GUI and MANUAL

Each experiment is supported with a user friendly GUI allowing complete observation of multichannel signals. GUI is designed using LabVIEW. Supplied codes can be modified to add new features. The projects and the software is supplied with the detailed information. The Laboratory manual is written to cover both theory and application. The engineering background is complemented with the step by step practical applications.



COMPLETE SOFTWARE SOLUTION

ATARGET Acoustic Direction Finding system software is seamlessly integrated with NI hardware and can be operated easily from its GUI. The software is coded in LabVIEW. Each project code is supplied with the laboratory manual. Students can easily modify these codes for custom applications. This software package allows students to localize sounds, identify azimuth and elevation angles of acoustic targets. The time and frequency characteristics of multichannel signals can be observed real-time. Students have the chance to operate with real-world signals and appreciate the power of signal processing provided by the ATARGET Acoustic Direction Finding system software.

Features

- Board level solution with large computation resources
- Larger FPGA resources
- Better A/D converter and signal accuracy
- Better accuracy in direction finding
- Open Source Software For Custom Applications
- Seamless integration of NI hardware and software
- Acoustic Direction Finding with Microphone Array
- Turn-key acoustics teaching platform

Laboratory Content with Board Level Embedded Platform

A. Hardware

- Microphones (MEMS Mic. Array, Professional Mic. Array)
- Microphone Stand
- NI Embedded System Board

B. Introduction to Acoustics and Microphone Sensors

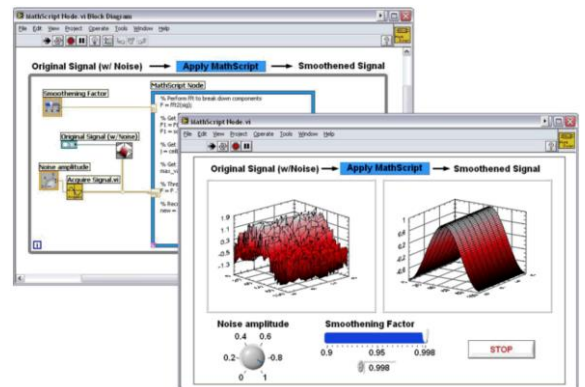
- Acoustic Waves and Artifacts
- Sensing acoustic signals
- Types of Microphones

C. Simple Programming in Embedded System

- Project Generation
- Virtual Instruments
- Running program on PC
- Running program on Embedded System

D. Multichannel Signal Reception

- A/D operation
 - FPGA programming
 - DMA
 - Waveform plotting
- ### E. Multichannel Acoustic Processing
- Sound Detection
 - FFT and Spectrum Monitoring
 - Direction Finding



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