Sensing Project

Option 1: Acoustic Sensing System

The task is to use hardware components to construct a functional acoustic sensing system. The components include a speaker, acoustic sensors (microphones), USB ports, a Windows laptop, and other auxiliary parts. The objective is to use the laptop to drive the speaker via USB to emit a specific waveform (the chirp signal). The signals will then be received by multiple acoustic sensors, digitized, and sent back to the laptop via USB to be stored as a data file. This project aims to teach basic circuitry knowledge, the interaction between a computer and other devices, programming skills, and the principles and mathematics of sensing.

Option 2: Millimeter Wave Sensing

The task is to use the millimeter radio frequency (RF) imaging system TIDEP-01012 to transmit and receive predefined waveforms. This project provides an opportunity to work with advanced industrial sensing systems, gain firsthand experience with the practical applications of Fourier and sensing theory, and lay the foundation for further exploration of new sensing technologies and potential new applications.