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SOUND LOCALIZATION & SOURCE SEPARATION
FOR ROBOTICS APPLICATIONS

This project aims at improving current sound processing methods for robotics applications. The improved methodology involves the usage of a microphone array and allows the robot to differentiate and localize simultaneous sound sources to perform better in a complex sound environment. First, independent source signals from the recordings were extracted; then, the incidence angles of those sound sources were found. Several digital signal processing techniques are incorporated in the proposed method. Frequency-Domain Independent Component Analysis(FDICA) is used to extract independent sound sources from sound mixtures, and Time Delay of Arrival(TDOA) method is used to perform source localization.