Localization of Objects in the High Noise and Reverberant Environment for Automobiles By using Acoustic Signals.

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PROPOSAL DETAILS

(CRG/2021/004743)

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Technical Details :

Scheme :	Core Research Grant		
Research Area :	Mechanical & Manufacturing Engineering & Robotics (Engineering Sciences)		
Duration :	36 Months	**Contact No :**	+918583039077
Date of Birth :	20-Apr-1988		
Nationality :	INDIAN	**Total Cost (INR) :**	77,50,800

Is PI from National Laboratory/Research Institution ? No

Project Summary :

This project is on development microprocessor-based SONAR for automobiles and development of robust signal processing techniques to achieve the localization of objects. After the development of robust localization signal processing technique, a significant number of experimental trails need to be performed to validate the developed model in both free field and reverberant environments. After that, microprocessor-based SONAR will be developed and the results will be validated with high accuracy and high precision instruments results. This research results will take place an important role in autonomous and semi-autonomous automobiles. A workshop is also planned under this project to share the experience and knowledge gained from this project. the permanent equipment will be used for subsequent projects in the vast area of automotive condition monitoring, Vibration analysis.

Objectives :

1. Development of robust algorithm to sound source identification and localization in the Free field environment. 2. Development of robust algorithm to sound source identification and localization in the noisy and reverberant environment. 3. Development of Microprocessor-based based SONAR device to localize the sound source in the Free field environment. 4. Development of Microprocessor-based SONAR device to localize the sound source in the noisy and reverberant environment.

Keywords :

Acoustic Signal Processing, Localization, Time delay Estimation, SONAR

Expected Output and Outcome of the proposal :

At the end of this project robust signal processing technique will be developed for the high noisy and reverberant environment. This environmental condition is suitable for metropolitan cities. Also, a microprocessor-processor-based SONAR system will be developed. This low-cost equipment will be utilized by various people in India. This research work will be significantly developing our Indian automotive industry.

Suitability of the proposed work in major national initiatives of the Government:

Make in India, Innovate India

Theme of Proposed Work:

Manufacturing, Transport

Collaboration Details for last 5 Years :

Planned Collaboration for the proposed work with any foreign scientist/ institution ? No