

# **Rajveer Shastri**

## **Title of Thesis: Shallow water ambient noise characterization using passive sonar data**

### **Summary of work and results:**

The research work presented in this thesis was concerned with shallow water ambient noise characterization of data collected off the West coast of India in the Arabian Sea. The aim was to increase the understanding of underlying characteristics of the passive sonar data in time and frequency domain with respect to known noise sources. This has been achieved by using statistical analysis of sonar data such as Gaussianity and Stationarity tests. The spectral behavior has been investigated for the effect of wind speed, tide height, temperature and shipping traffic. Existing wind model has validated for the ambient noise data. Diurnal and seasonal variations in the spectra have been characterized. Time frequency features have been quantified using a number of statistical and image quality measures.

### **My experience working with us:**

Dr. Das has great insight of underwater acoustics domain with his on field experience in his career. He has done enormous work in the field of underwater domain and guided many students of reputed Institutes. He has global connect because of his international work experience. Blends of his knowledge, experience, network and made me to reach and achieve higher rewards than I could ever have been. Through MRC he has made a platform available to all students and researchers to contribute in the underwater acoustics domain.

### **Comments on the underwater domain and its challenges and Potential:**

Underwater ambient noise, although the complex subject, but is of keen interest to a diverse set of scientists in underwater acoustics, oceanography, and public stakeholders in the area of marine mammal biology and conservation. The significant research and development trends even the commercial, non-military applications in underwater domain has also gone up many folds and thus the requirement of enhanced technology practices has become a critical requirement today.

### **Recommendations for the future research scholars:**

Very minimal ambient noise analysis information of the Indian Ocean Region is available in the open literature. Systems deployed for military as well as non-military applications continue to perform sub-optimally in these waters. Effective underwater systems are critically needed to tap the vast undersea resources available in the IOR given that the Indian coastline extends 7,500 Km. The knowledge of ocean acoustic properties and state of the art underwater systems for Indian Seas and coastal areas are very crucial and critical requirement for our national defense and ecology. Big data, Machine Learning Deep learning and IoT technologies are the keys to solve problems in underwater domains.

**Biosketch:**

Dr. Rajveer K. Shastri received his Ph.D. in the area of underwater signal processing in 2014, from Shri Guru Govind Singh Engineering and Technology, Nanded. Since 2003, he has served at the various academic levels and currently, he is Professor and Dean Academics at VPKBIET, Baramati. He has taught signals and system, digital signal processing, digital image processing, and VLSI design. He was awarded with Summer Faculty Research Fellowship 2013 from CARE, IIT Delhi. He has presented his research papers in USA and Brazil. He has visited universities abroad like North Carolina State University, Michigan Tech. University and San Jose University USA. He is a Member of IEEE Oceanic Engineering Society (80628231), life member of ISTE (LM75643) and IETE (M-223285).