ELECTRONICS DIVISION



Design and Development of an Acoustic Data Generator (ADG) for SONICS SYSTEM SIMULATION

30 July 2024

Design and Development of an Acoustic Data Generator (ADG) for SONICS SYSTEM SIMULATION

Scope of the work is to generate inputs for a Sonar\Sonobuoys Simulation Model (SONICS), through the design and development of a SW ADG, developed on Model Based SW. The final output will be the generation of Acoustic Underwater Signals for the simulated SONICS System.

In details, the system will provide in input to the Sonar/Sonobuoys Simulation:

- A Real-time reconstructed acoustic signal
- A Characterization of the reconstructed acoustic signal
- An Estimated position and status of sonobuoys

The SONICS Data Processor (SDP) will receive the generated <u>Real-Time acoustic signals</u> produced by ADG and provide target localization, tracking and classification capabilities.

SONICS Simulation Models : inputs, outputs and functionalities

Acoustic Data Generator

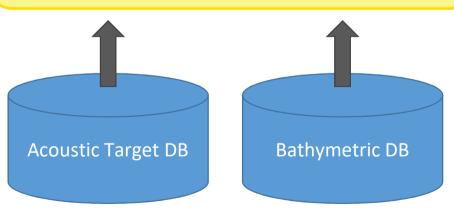
- Target position, velocity, orientation and status
- Ownship position, velocity, orientation and status
- Weather conditions and sea state

Available Data

- Reconstruction of emitted and/or reflected acoustic signals from targets and principal features
- Estimation of acoustic propagation losses, noise and clutter
- Evaluation and/or computation of environmental data (salinity, temperature, etc...)
- Simulation of degradation/distortion of acoustic signals due to loss of contact with sonobuoys

- Real-time reconstructed acoustic signal
- Characterization of reconstructed acoustic signal
- Estimated position and status of sonobuoys

Expected Data: Real-Time acoustic signals as received by the actual SONAR Data Processor.



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Software Development

SW Development

All the tasks will be developed on LED Workstation. (Unclassifed data but company confidential) <u>Coding</u>: C\C++

Tool: Open Source C compiler, Qt 5.13, Model Based Suite (MATHWORKS or equivalent)

Operative System

Red Hat Enterprise 8.1 – 64bit Linux Microsoft Windows 10 Enterprise (or superior)

• Timing:

6 month by the Project Thesis start, optionally extension up to 8 months

• Location:

LED Ronchi dei Legionari site, at least 20% of time

Relevant Skills:

STEM Master Degree on going is required, the most relevant courses are TLC, Electronic, Computer Engineering or Physic. Code development in C\C++ and Matlab\Simulink knowledge is required.