VACANCY NOTICE

Scientist Signal Processing (220707)

Primary Location: Italy-La Spezia  
NATO Body: Centre for Maritime Research and Experimentation (CMRE)  
Schedule: Full-time  
Application Deadline: 09-Oct-2022  
Salary (Pay Basis): 4,193.62Euro (EUR) Monthly  
Grade: NATO Grade G11  
Clearance Level: NS  
(NOTE: This post will be filled by TWO candidates.)

Appointment will be subject to receipt of a NATO SECRET security clearance (provided by the national Authorities of the selected candidate) and approval of the candidate’s medical file by the CMRE Medical Adviser.

CMRE’s Maritime Unmanned Systems (MUS) for Anti-Submarine Warfare (ASW) project is looking for TWO Junior Scientists with experience in developing advanced signal processing algorithms for passive and active detection of submarine targets.

GENERAL BACKGROUND

The Centre for Maritime Research and Experimentation (CMRE) is part of the NATO Science and Technology Organization (STO). CMRE is an established, world-class scientific research and experimentation facility that organizes and conducts scientific research and technology development, centred on the maritime domain, delivering innovative and field tested Science & Technology (S&T) solutions to address defence and security needs of the Alliance.

CMRE has more than 60 years of experience and has produced a cadre of leaders in ocean science, modelling and simulation, acoustics and other disciplines, as well as producing critical results and understanding that have been built into the operational concepts of NATO and the Nations.

POST DESCRIPTION

Location: La Spezia, Italy, 80 Km north of Pisa, on the Gulf of La Spezia  
Division: Research Division

POST CONTEXT

This is a position at the Centre for Maritime Research and Experimentation (CMRE), which is part of the Science and Technology Organization (STO) of the North Atlantic Treaty Organization (NATO).

CMRE is an established, world-class scientific research and experimentation facility that organizes and conducts scientific research and technology development, centered on the
maritime domain, delivering innovative and field-tested Science & Technology (S&T) solutions to address defense and security needs of the Alliance.

The position is within the Research Division (RD), which is responsible for identifying, developing and delivering Science & Technology (S&T) to the needs of the Alliance in the maritime domain. The Division leads the development of CMRE’s scientific strategy and through its capability in ocean sensing, numerical modelling, big data analytics, artificial intelligence and autonomy, delivers the Centre’s S&T goals while maintaining CMRE’s reputation within the scientific community.

The Research Division is composed of the four following sections:

- Anti-Submarine Warfare (ASW);
- Mine Countermeasures (MCM);
- Data & Environmental Knowledge and Operational Effectiveness (D-EKOE);
- Maritime Unmanned Systems Enablers (MUSE).

This acoustic analyst and signal processing position is within the ASW Section and supports the Maritime Unmanned Systems for ASW project within the Autonomy for ASW Programme.

**PRINCIPAL DUTIES**

Under the management of the ASW Section Head, the incumbent will perform duties such as the following:

- Support the Autonomy for ASW Programme to develop and implement, test and validate novel and state-of-the-art signal processing algorithms for the passive and active detection of submarine targets for the CMRE project Maritime Unmanned Systems (MUS) for ASW;

- Testing and validation of the signal processing algorithms will be performed both forensically on existing trial data and at near-real time, or in real-time, during scientific sea trials, operational experimentation opportunities and naval exercises;

- The scientist will develop algorithms capable of advancing the state-of-the-art of submarine target detection, direction-of-arrival estimation and localization in the very low up to the high frequency regime (.01 Hz to 20 kHz);

- Work with the other scientists in the Autonomous ASW programme to develop and implement advanced concepts for data fusion between a heterogeneous collection of
unmanned and manned ASW platforms at the detection, contact and track level;

- Maintain knowledge and understanding of up-to-date passive and active acoustic signal- and array processing concepts, including space-time adaptive signal processing (STAP), holomorphic processing, and detection of continuous and transient signals;

- Develop and maintain connections with other scientists in the naval R&D, underwater acoustic, seismic and radar signal processing communities, engaging in professional societies, participating to scientific meetings, and, if possible, publishing in the peer reviewed scientific literature;

- Generate high quality CMRE reports containing details of algorithmic approaches developed for the project and summarizing achieved performance using commonly recognized metrics.

SPECIAL REQUIREMENTS AND ADDITIONAL DUTIES

a. Flexibility Clause
   • The incumbent may be required to perform other related duties even in other parts of the organization as directed;
   • As required by the Program of Work, the incumbent may be asked to participate in working groups or project teams and to coordinate and organize the work of other scientists and staff.
   All other related duties should correspond with the required competencies for the job.

b. Deployment/Travel
   The incumbent may be required to perform his/her duties onboard Centre or chartered vessels. The incumbent may be required to undertake TDY assignments within and outside NATO boundaries.

ESSENTIAL QUALIFICATIONS

a. Professional/Experience
   • Experience in developing signal- and data processing algorithms, and testing and validating them on data collected during scientific experimentation, operational experimentation, exercises or operations;
   • Solid background in physical acoustics
   • Knowledge of scientific programming languages: Matlab/Octave/Python, or similar.

b. Education/Training
• A Master of Science degree from a recognised University in mathematics, physics, engineering or a related field and up to 3 years post-related experience.

c. Language Requirements

• A thorough knowledge of one of the two NATO languages, both written and spoken, is essential and some knowledge of the other is desirable;
  • English SLP 3333.
  NOTE: Work at CMRE is conducted in the English language.

d. Certification
The incumbent needs to hold a fit for sea certificate in line with the International Maritime Organization (IMO) and International Labour Organization (ILO) standards before taking up duty or capable of getting it during the first 6 months of employment.

DESIABLE QUALIFICATIONS

• A PhD from a recognised University in mathematics, physics, engineering or a related field;
  • Experience in developing (passive or active) sonar signal- and array processing algorithms specific for ASW applications;
  • Expertise in the field of (very low frequency) sound propagation in sediments;
  • Expertise in the modelling of elastic wave generation, propagation and scattering (using state-of-the-art tools);
  • Experience in processing data collected from linear- or volumetric hydrophone arrays, acoustic vector sensors (single or in array configuration), geophones and/or seismic sensors (OBS);
  • Knowledge of ASW, Maritime ISR, Naval Mine warfare and Maritime Situational Awareness warfare disciplines;
  • Operational experience in the field of ASW;
  • Knowledge related to autonomous maritime vehicles such as robotics, perception, tracking, data fusion, automatic target recognition, machine learning, artificial intelligence, cooperative behaviour, human-machine interfaces, modelling and simulation, acoustic sensors;
  • Sea-going experience in the context of scientific research and/or military exercises;
  • Working experience in a military environment;
  • Working experience in an international environment.

REMARKS
The duties are mostly performed in an office environment but may include work on board of a vessel.

**HOW TO APPLY:**

Applications are to be submitted using the NATO Talent Acquisition Program (NTAP)
https://nato.taleo.net/careersection/2/jobdetail.ftl?job=220707&lang=en
Applications submitted by other means are not accepted. NTAP allows adding attachments. Essential information must be included in the application form. Particular attention should be given to Education and Experience section. Each question should be answered completely. Expressions such as “please see annex / enclosed document” or invitations to follow links to personal webpages are not acceptable and will be disregarded. All answers should be in English preferably, or French.