VACANCY NOTICE

Tracking and Data Fusion Scientist (220708)

Primary Location: Italy-La Spezia
NATO Body: Centre for Maritime Research and Experimentation (CMRE)
Schedule: Full-time
Application Deadline: 02-Oct-2022
Salary (Pay Basis): 5,378.03 Euro (EUR) Monthly
Grade: NATO Grade G15
Clearance Level: NS

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 a Researcher with experience in the field of advanced Data Fusion and Tracking techniques.

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, centred on the maritime domain, delivering innovative and field tested Science & Technology (S&T) solutions to address defence 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) solutions 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 comprised of the four following sections:

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

This position is within the ASW Section. The ASW team seeks to develop, test and validate advanced concepts for unmanned ASW. As part of the overall Maritime S&T Programme of Work, which contains two principal projects:
- Maritime Unmanned Systems for ASW (MUSA), and
- ASW Decision Support.

The focus of the MUSA project is on the development of advanced algorithms for the enhancement of the perception element of unmanned (static and dynamic) systems for ASW, a (growing) data science component, a parallel effort in advanced autonomy algorithm development, and a significant sea-going project where systems are tested in representative ASW environments, often against actual submarine targets.

In the perception enhancement area, advanced signal processing algorithms are created for the Detection, Localization, Classification and Tracking of submarine targets. This work covers both passive and active ASW. The incumbent will work in this area, focusing on Data Fusion and Tracking aspects of the ASW processing chain.

The Data Science part of the MUSA project aims at cataloguing (previously) acquired data and going towards a Machine Learning (ML) capability for submarine classification. In the project’s autonomy development area, high-level task allocation algorithms are developed alongside collaborative and single vehicle autonomy rules, with the objective to maximize the utility of unmanned systems as they manoeuvre to detect, localize, classify and track submarines.
The sea-going element includes participation in multi-national experiments for the development and testing of advanced ASW concepts in a collaborative environment, and participation in NATO ASW exercises.

**PRINCIPAL DUTIES**

- Conduct research in the field of advanced Data Fusion and Tracking techniques, and apply the results to the networked ASW problem;
- Conduct joint research activities in the ASW Section to work towards the common goal of improving the entire, integrated, ASW processing chain, i.e. work together with target classification experts (AI), roboticists, signal processing experts, operations researchers and analysts;
- Plan activities, monitor and execute;
- Adopt data and metadata formats which fit the needs of CMRE;
- Harmonize software development efforts with respect of CMRE software best practices;
- Support the CMRE sea-going experiments with a focus on data collection, tracking and fusion, and real-time algorithms;
- Analyse data collected at sea (using KPIs) and report;
- Publish results both internally (CMRE reports), and externally in peer-reviewed journals.

**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**
   - Proven work experience as a scientist in the field of Tracking and Data Fusion;
   - Strong research record as evidenced by peer-reviewed publications and/or technical reports.
• Expertise in statistical analysis;
• Expertise in signal- and data processing;
• Proven ability to analyse large quantities of (experimental) data, to determine findings from the analysis (KPIs) and to report on them;
• Proven ability to develop algorithms in MATLAB or other scientific programming languages;

b. Education/Training
• A minimum requirement of a Master of Science degree from a recognised University and 5 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.

DESIRABLE QUALIFICATIONS

• A PhD in the field of Tracking and Fusion or a related subject;
• Outstanding track record of science publications and/or reports;
• Demonstrated track record delivering high quality and valued products, such as reports or algorithms, to a customer;
• Experience working in multi-disciplinary environments with experts from other domains;
• Experience working in an international environment;
• Expertise in active or passive sonar.
• Expertise in multi-target tracking;
• Expertise in multi-sensor data fusion;
• Expertise in developing real-time, scalable signal processing solutions;
• Some experience in implementing algorithms on embedded systems;
• Experience with Agile methodologies;
• International reputation;
• Experience interacting with high-level civilian and/or military decision makers;
• Experience in project management;
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=220708&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.