



Job offer
Royal Military Academy - Patrimony



Research scientist/engineer (M/F/X)
Department CISS
Project CISS-MultiCam+
Publication: 01st of March 2024

Job description and associated tasks

In the framework of a research project named “MultiCam+”, financed by Belgian Defence, we are looking for a **full-time research scientist/engineer with a master's degree in Physics or Electrical Engineering (Applied Sciences, Engineering Sciences)**.

The Royal Military Academy of Belgium (RMA) is a military institution responsible for the basic academic, military and physical training of future officers, and for the continuing advanced training of officers during their active career in the Belgian Defense department. It is fully recognized as a university, fulfilling the same criteria as civilian universities. The Royal Military Academy is also conducting scientific research at university level for projects funded by the Belgian Defense department or external sources.

You will work within the department of CISS of the Royal Military Academy, more specifically in the research unit Laser & Optronics (<https://optro.rma.ac.be>), and in close collaboration with scientists and engineers from the other consortium partners, namely Sioen, Seyntex, and Crye Precision.

You will conduct scientific research at university level on a project entitled “Exploring the potential of multispectral camouflage against current and emerging threats. (MultiCam+)”

The Belgian Defence has signed a contract recently with the consortium Sioen – Seyntex - Crye Precision, regarding the renewal of the battle dress and the accessories related to this battle dress. Belgian Defence wants to keep on exploring novelties in the domain of personal camouflage and, if new materials are available, to test and assess them against a reference. A robust and reproducible evaluation method is needed for the different spectral bands that will be covered. Performance will be tested in a lab environment but also on the terrain.

This proposal will investigate the extended camouflage potential by studying the user needs, consolidating what is already available on the market, supporting the development of new promising camouflage materials, and testing them in the lab and on the terrain with panchromatic and multispectral sensors. As an outcome of this project, a series of sample products with their TRL (Technology Readiness Level) will be available completed with a SWOT analysis which couples back to the used needs.

The activities for this project have been organised in three phases, following a spectral sequence:

- In phase 1 the challenges in the NIR and the first part of the SWIR will be tackled.
- In a second phase the extended SWIR domain will be covered.
- In a third phase the challenges of camouflaging in the thermal IR domain (dealing with the MWIR as well as the LWIR) will be studied.

For every phase the same cycle will be respected:

- A necessary first step before developing any new camouflage material or test method, is to understand the user needs. Discussion with end users and/or policy makers in the camouflage domain will allow the consortium to translate these user requirements to technical specifications, relevant for the camouflage material to be developed, but also for choosing and creating the most appropriate evaluation method. This process will be complemented with an identification of the sensor threats in this spectral domain.
- The two following steps will deal with the actual camouflage technology development and improvement, and the creation of sample products. These steps will be led by the industrial consortium partners.
- In a fourth step the sample product will be measured, tested, and evaluated, using a method appropriate for the type of sample product, the spectral band and (panchromatic or multispectral) sensor against which the sample product should offer a camouflaging effect, and finally the user requirements.
- In a last step a SWOT analysis will be performed to balance the production challenges and cost with the camouflage performance and application domain (garment, accessories, ...).

RMA will mainly contribute to steps 1-4-5 of the cycle described above, and this for all the spectral bands that were discussed.

Main Tasks

- Literature review on typical military sensors and the related phenomenology, and on camouflage performance metrics;
- Establishment of camouflage functional requirements based on user needs;
- Definition, testing, and validation of camouflage performance evaluation methods in the different spectral bands;
- Planning and coordination of measurement campaigns in the lab and outdoors;
- Analysis of the predictive nature of lab tests versus outdoor tests;
- Collection, analysis, processing and interpretation of data obtained from various performance evaluation methods on a series of fabric samples (having specific camouflage properties);
- Interaction with the other consortium partners to discuss results and plan future progress.

Required skills

Technical skills

- The applicant shall have a master's degree in Physics, or Electrical Engineering (Applied Sciences, Engineering Sciences).
- Experience with camera's working in one of the mentioned spectral domains is an added value.
- Experience with (spectral) image analysis is an added value.
- Experience with camouflage performance evaluation is an added value.

Personal skills

- You conduct scientific research in an independent and upright way within a multidisciplinary environment.
- You think in an innovative and creative way.
- You communicate your results in a clear, concise and precise manner.
- You take initiatives.

- You are involved and results oriented.
- You are honest, loyal toward the institution and respect confidentiality.
- You plan and manage proactively your self-development, while being critical to your own functioning and striving to your self-improvement.
- You improve the team spirit and solve interpersonal conflicts.
- You commit yourself in your job by giving the best of your aptitudes in striving toward the highest quality standards and persevere when needed.
- You solve problems autonomously and find alternatives or solutions.
- You behave in a respectful way toward the others, their ideas and opinions as well as toward procedures and instructions.
- You are flexible for change and adapt yourself.
- You are capable of writing qualitative technical reports on your work.
- You are capable to manage, direct and assist with the composition of deliverables towards the funding authority.
- You are capable to write and present scientific papers about your work.

Other skills

- The applicant shall have good knowledge of English (oral / written).
- Minimum knowledge of French or Dutch is an added value for collaboration with colleagues.

Specific requirement

- The research scientist/engineer may be exposed to classified information and will therefore have to obtain the required security clearance. The candidate must consent with the background check required to obtain this clearance, which will be executed by Belgian Defense. Due to the nature of the topic and the required security level, only EU applicants will be accepted.
- Working for the Patrimony, the researcher is required to live in Belgium.

Application

You will be working in a military environment. That is why everyone is expected to undergo a security verification. Please add to your application the filled-out document. The form can be downloaded from: <http://www.rma.ac.be/nl/aanvraag-veiligheidsverificatie>"

Send by email:

- a motivational letter;
- a CV;
- a scan of your ID card (both sides);
- the filled-out and signed security document: <http://www.rma.ac.be/nl/aanvraag-veiligheidsverificatie>"

to Mrs Marijke VANDEWAL (marijke.vandewal@mil.be) and to Mrs Helena BRUYNINCKX (erm-deao-rsw@mil.be).

Please mention clearly the reference of the project: **"CISS-MultiCam+"**.

Application deadline: **29th of March 2024**.

A first pre-selection will be conducted based on the received documents. Applicants meeting the requirements will be invited to an interview at the Royal Military Academy, rue Hobbema 8, 1000 Brussels (optional online; in case of a non-Belgian application). The date and time of the interview will be communicated to the preselected candidates.

Miscellaneous

Contract

- Probable date of recruitment: as soon as possible, in consultation with the applicant.
- Status: full-time employment based on an open-ended contract with the Patrimony of the Royal Military Academy (you will not be a civil servant).
- Wage scale: class A1 (holder of a Master's degree), class A2 (holder of an Ir degree). RMA-Patrimony applies a merit-based research career track, allowing researchers to advance in wage scale based upon annual evaluations.
- Holiday allocation;

Extra-legal benefits

- Possibility to benefit from a bilingualism allowance (Dutch/French) following a SELOR test;
- End-of-year bonus;
- Free DKV hospitalization insurance. Possibility of additional affiliation for one or more persons living under the same roof: spouse, child(ren) (50% of the price per additional member);
- Bike allowance / Free public transport (home-work commute);
- Free access to campus sports facilities outside working hours;
- On-campus restaurant and cafeteria with democratic prices (discount on the daily menu);
- Flexible working hours within the 38-hour week;
- Teleworking possible with allowance;
- Meal vouchers;
- Holidays:
 - 26 days holiday / year from the 1st year of contract (then from 45 years: +1 day holiday every 5 years)
 - + 3 extra days-off / year of "service dispensation" offered by the department
 - + 1 week OFF every year between Christmas and New year's Eve (independent of the annual balance of holidays).
- Advantages and interesting offers thanks to the Benefits@work card (discounts, vouchers...);
- Entitlement to services offered by the 'Office Central d'Action Sociale et Culturelle de la Défense' (OCASC): among others holiday centres, discount on travel organised by the tour operator...;
- Possibility of benefiting from the nursery funded by Belgian Defence (subject to availability).

Workplace

- The usual workplace is the Royal Military Academy, 1000 Brussels (Avenue de la Renaissance 30)
- Occasional travels abroad for scientific conferences and training are possible as well as measurement campaigns off campus and meetings at partner's premises.

Points of contact

- Concerning the job content: Mrs Marijke Vandewal (marijke.vandewal@mil.be)
- Concerning the recruitment modalities: Mrs Helena Bruyninckx (erm-deao-rswo@mil.be)
- For more information about the Royal Military Academy, see <http://www.rma.ac.be>
- For more information about the research unit of the RMA in which you will be integrated, see <https://optro.rma.ac.be>