JOB OFFER
Research Engineer (junior profile)
Mathematics department > 4D Perception Lab
Project: "RAVN"
Publication: 27/11/25

CONTEXT

The Royal Military Academy (RMA) is a military institution and is fully recognized as a university, fulfilling the same criteria as civilian universities. The RMA is also conducting scientific research at university level for projects funded by the Belgian Defense department or external sources.

In the framework of the study RAVN (Rapid Aerial Vehicle Neutralization), we are looking for a full-time researcher in computer vision and/or robotics with a Master degree in Engineering Science, Applied Sciences, Civil Engineering, Physics, Computer Science or Mathematics.

We value diversity and equal opportunities. We firmly believe that diversity enriches our community, and we encourage all qualified candidates to apply.

PROJECT:

You will work within the 4D Perception Lab (https://4dpl.rma.ac.be/) of the department of Mathematics within the Faculty of Polytechnics of the RMA and in close collaboration with military and humanitarian demining agencies. You will conduct scientific research at university level on a project entitled "RAVN".
The **RAVN project** aims to develop a multi-drone system capable of detecting, tracking, and neutralizing hostile drone swarms in complex, GNSS-denied environments. The system combines multiple autonomous aerial platforms that collaborate to achieve real-time situational awareness through distributed sensing, mapping, and coordination. Our goal is to integrate advanced perception and localization algorithms on drones that will be provided by project partners to enable coordinated multi-agent autonomy and threat response.

MAIN TASKS:

- Development of algorithms for **SLAM** using onboard sensors such as cameras and IMUs. These algorithms will provide accurate 3D localization and mapping in real-time, even under challenging conditions (e.g., high dynamics, low texture, or degraded visibility).
- Research and implementation of multi-agent localization techniques with sensor fusion including RADAR and UWB for cooperative perception among multiple UAVs.
- Participation in field experiments and measurement campaigns to validate performance in realistic counter-UAS scenarios.
- Preparation of scientific publications and contributions to project deliverables.

SKILLS AND EXPERIENCE:

Degree(s) required: Master Degree in Engineering Science, Applied Sciences, Civil Engineering, Physics, Computer Science or Mathematics.
This position is open for **junior profiles** (ideally 0-3 years of experience) in computer vision and/or robotics.

The possibility to start a PhD related to the project will not be offered, at least not during the first 2 years of the study.

"MUST HAVE" skills:

1. Training or experience in 3D simultaneous localization and mapping (SLAM), state estimation, 3D computer vision or related fields.
2. Solid understanding of the theoretical foundations of SLAM, state estimation, and related fields.
3. Experience in programming with C++ or Python in a Linux environment.
4. Ability to quickly understand and navigate complex systems and established code bases.

"NICE TO HAVE" skills:

1. Experience with hardware prototyping (3D printing, mechanical integration).
2. Experience with the Rust programming language.
3. Experience with 3D visualization frameworks such as Rerun, Three.js, WebGL.

Personal skills:

- You conduct scientific research in an independent and upright way within a multidisciplinary environment and communicate your results in a clear, concise and precise manner.
- You take initiative, solve problems autonomously and find alternatives or solutions.
- You are flexible for change and adapt yourself.
- 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 will be working very closely together with the industrial partner and will get insight in their proprietary intellectual property. Confidentiality is therefore an absolute must.

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 peers.
- A driver's licence (but not necessarily a car) is highly recommended.

Specific Requirements

- The researcher 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.
- Only applicants with a nationality of a country that is both part of NATO and the EU will be eligible.
- Working for the Patrimony requires living in Belgium for the duration of the study.

Application

Please send by email:

- (in the body of your email) a summary containing
  - Your affinity with the research topic
  - Your academic degree and years of relevant experience
  - how your profile matches the list of "must have" and "nice to have" skills listed above, keeping the same structure/numbering as in this job offer
- (in attachment) a CV
- Your nationality

to Dr ir Charles HAMESSE (Charles.hamesse@mil.be), Prof Dr ir Rob HAELTERMAN (rob.haelterman@mil.be) and to ERM-DEAO-STAFF-HRMGT-PATRIMONY@mil.be .

Please mention clearly the reference of the project: "**RAVN**".

Application deadline: December 14th, 2025

The interviews will take place at the Royal Military Academy, Hobbemastraat 8, 1000 Brussels. If needed, on-line interviews can be organized. The date and time of the interview will be communicated to the preselected candidates.

Contract

- Probable date of recruitment: **Mars 2nd, 2026**, in consultation with the applicant.
- Status: **Full-time employment** (38 hours / week) based on an open-ended contract with the Patrimony of the Royal Military Academy (you will not be a civil servant).
  If needed:
  - Please note that your contract will be open-ended, but the financing of the contract will be tied to the funding project, which is guaranteed **until December 1st, 2028**. The financing of your contract beyond that period is therefore not 100% guaranteed. However, the Patrimony has a policy to keep the good elements on board and the research focus of this job offer fits within our core research activities, so there is a possibility that we will be able to offer you follow-up projects beyond that date.
- Wage scale: class A1 (holder of a Master's degree in Science or equivalent), class A2 (holder of an Ir degree or equivalent recognized in Belgium or doctor's degree in the same area of expertise). RMA-Patrimony applies a merit-based research career track, allowing researchers to advance in wage scale based upon annual evaluations.
- Holiday pay.

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);
- Meal vouchers (6€ / day);
- 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 (2 days / week max);

- Holidays:
  - 29 days holiday / year from the 1st year of contract (then from 45 years: +1 day holiday every 5 years)
  - 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 to benefit from the nursery funded by Belgian Defence (subject to availability).

Workplace

Royal Military Academy, Avenue de la Renaissance 30, 1000 Brussels. Occasional travels abroad for scientific conferences, measurement campaigns, etc.