JOB OFFER
Researcher (M/F/X) on AI & Optimization (M/F/X)
Department of Mechanics > Robotics & Autonomous Systems unit
Publication: 23/12/2024

CONTEXT

The Royal Military Academy 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.

We are looking for a research engineer to support the implementation of European Commission (EC), European Defence Agency (EDA) and Defence contracts in robotics (software) projects involving international, multi-partner collaboration in applications including ground, air and maritime robotics, including counter-drone systems. The position is in the department of Mechanics in the Robotics & Autonomous Systems (RAS) unit (https://mecatron.rma.ac.be/). The candidate will support the RAS unit in the development of multi-objective constraint optimizers and AI tools across multiple projects. For this reason, we are looking for a full-time researcher with a master degree in Mathematics / Informatics / Computer Science / Applied Sciences / Engineering / Physics and experience in the field of Robotics.
We offer an enticing work environment, where you will work in a multi-national team on a mix of European and Belgian collaborative research projects with real robotic systems and practical applications on the terrain.
We value diversity and equal opportunities. Whether you are a man, a woman or X, or come from any background, we firmly believe that diversity enriches our community, and we encourage all qualified candidates to apply.

MAIN TASKS:

The main task of the candidate will be to support the RAS team across multiple projects that all deal with AI and multi-agent systems in order to solve questions related to AI & optimization, more specifically:

- Leading AI architectures definition, AI component design and managing integrations across projects
- Developing an AI-based classifier that can detect anomalous / suspicious flight behaviours in a large and real-time database of drone flights
- Leading optimization framework definition (problem definition, choice of solvers, …), optimization component design and implementation across projects
- Supporting the management of the local high performance computing infrastructure (CPU & GPU cluster)
- Curating & setting up datasets, performing network training and running inference with real sensor data on edge computers
- Supporting the team with code optimization and management
- Supporting the implementation of project-specific AI & optimization software
- Interacting closely with the technical leads (and occasionally acting as technical lead, depending on projects and work scope)
- Ensuring the timely release and delivery of projects, with required quality level
- Producing required documentation.

SKILLS AND EXPERIENCE:

Degree required: Master degree in Mathematics / Informatics / Computer Science / Applied Sciences / Engineering / Physics and experience in the field of Robotics. This position is open for both **junior profiles** (0-3 years of experience) and **experienced profiles** (more than 3 years of experience).

"MUST HAVE" skills:
Experience / training in:

- design & implementation of AI algorithms (deep learning neural networks)
- design & implementation of solvers for optimization problems
- programming (Python is required, C/C++ is recommended)
- robotics & AI, including knowledge of ROS (https://www.ros.org/)
- software engineering life cycles, Agile methodologies and Scrum experience
- Hands-on experience with Continuous Integration processes and agile software development, including experience with complex software architectures assemblies, deployment and testing (e.g. Docker, Conda), Virtual Machines.

"NICE TO HAVE" skills (3-5 max):

- Previous experience in computer vision or natural language processing
- Proficiency in technical documents production
- Signal processing (sensor)
- Control Engineering.

Personal skills (3-5 max):

- You conduct scientific research in an independent and upright way within a multidisciplinary environment
- You think in an innovative and creative way
- 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.

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

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.
- Working for the Patrimony requires living in Belgium for the duration of the study.

APPLICATION

Please send by email a CV and a scan of your ID card (both sides) to Mr Geert De Cubber (geert.de.cubber@mil.be) and to erm-deao-rswo@mil.be
Please mention clearly the reference of the project: "**MECA-AI & Optimization Engineer**".

Application deadline: **26/01/2025.**

On-line interviews will be organized. The date and time will be communicated to the preselected candidates.

CONTRACT

- Probable date of recruitment: **From March 2025**, 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). Please note that your contract will be open-ended, but the financing of the contract will be tied to different funding projects, which are currently guaranteed until November 2027. 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 high chance that we will be able to offer you follow-up projects beyond that date if you decide to stay.
- Wage scale: class A1 (holder of a Master's degree in Science or equivalent), class A2 (holder of an Ir degree or equivalent Master's in Engineering Sciences, 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 & New year's Eve (independent of the annual holiday balance).
- 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, etc.