



VACANCY NOTICE – 2023-IPR-S4001-FGIV-022713

FG IV Scientist - Exploratory Research Project

Innovative Neuromorphic Vision Sensors (INVISIONS)

Type of contract	Member of the European Commission's contract staff, Function Group IV (article 3b of the Conditions of Employment of Other Servants)
Duration of contract	24 months employment contract for the Exploratory Research Project Innovative Neuromorphic Vision Sensors (INVISIONS). Employment contracts for this category of staff can be renewed up to maximum 6 years.
Area	Mathematics
Place of employment	Ispra (IT)
Indicative basic salary	3877,47 - 5616,29 € (applicable as of 1 st of July 2022) For more detailed information please consult: Working Conditions

WE ARE

The [Joint Research Centre \(JRC\)](#) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

The current vacancy is in the Safety and Security of Buildings Unit of the Directorate for Space, Security and Migration of the JRC. The Directorate's mission focuses, among the others, on emergency preparedness, response, disaster risk management and resilience in cases of natural and man-made hazards. It also focuses on cyber security, data protection and space infrastructures as well as the use of communications data by security and intelligence agencies and serves the perspective of the emerging Digital Single Market.

The Safety and Security of Buildings unit is active in research activities on Smart Cities, Smart Infrastructures and buildings, with real-world implementation of IoT and Wireless Sensor Networks and an active Smart City digital platform at the JRC Ispra site. The unit also includes the European Laboratory for Structural Assessment and the MITICA testing site for the indirect Structural Health Monitoring with connected and automated vehicles.

Further information is available at: [European Laboratory for Structural Assessment: Reaction Wall facility \(europa.eu\)](#)

The Scientific Development Programmes Unit is in charge of the overall JRC Exploratory Research Programme.

The vacancy is within the **Exploratory Research Project Innovative Neuromorphic Vision Sensors (INVISIONS)**. The JRC Exploratory Research Programme is a strategic initiative characterised by ideas that might lead to novel results and qualitatively enrich current JRC scientific work.



We offer:

An excellent opportunity to conduct analytical studies and experimental activities in the area of Neuromorphic Vision Sensing and event data processing.

The research will focus on the development of novel algorithms for processing and analysing event-based vision data for their implementation in real-world applications.

In this project, we will be researching how to apply novel methods for object identification and tracking dynamics from experimental data obtained from visual-event-based processes, using recently developed bio-inspired neuromorphic-based visual sensors.

The activity will take advantage of the existing laboratory facilities and specimens to study the implementation of vision sensors in specific scenarios

WE PROPOSE

The successful candidate will carry out scientific tasks in accordance with the Exploratory Research Project Innovative Neuromorphic Vision Sensors (INVISIONS).

The successful candidate will

- Contribute to the design and development of a testbed for optimal sensor parameter configuration and sensor testing in a controlled environment;
- Perform experimental calibration tests and experiments with neuromorphic event-based cameras;
- Process and analyse neuromorphic sensors' data;
- Install sensors and set up acquisition systems;
- Develop algorithms for object identification and tracking dynamics from event-based vision sensors data;
- Design and perform real-world experimental campaigns and applications with neuromorphic sensors;
- Collaborate on IoT, Wireless Sensor Networks and Smart Cities activities;
- Provide regular and accurate reports on scientific activities every twelve months and a final report;
- Contribute to Project management and Exploratory Research programme activities;
- Report to the Project Leader on progress, achievements and potential problems in a timely manner and maintain interactive communication with colleagues;
- Contribute to foresight studies, technology assessments and analyses of emerging technologies in the field of event-based image sensors;
- Explain the research activities and achievements to third parties, such as scientific communities and the general public;
- Write, publish and present scientific reports, articles and conference papers;
- Propose new activities, including competitive activities, where relevant.

WE LOOK FOR

A scientist with the following essential qualifications:

- A doctoral diploma or master degree in computer science, computer engineering, electronics, physics, mathematics or related field. For master degree holders, at least one year professional experience is required;
- Extensive knowledge/experience in data processing and analysis, and computer programming with Python and/or C++;
- Good oral and written communication skills in English (B2).



In addition, the following competences will be considered as an advantage:

- Knowledge of machine learning, graph networks and numerical optimisation;
- Knowledge in the area of machine vision;
- Knowledge of relevant programming languages and numeric computing platforms (e.g. MATLAB);
- Knowledge of other languages;
- Ability to work in a team and in a multi-cultural environment;
- Event-based sensor or video data processing;
- Data visualisation skills (e.g. design and development of data visualizations and dashboards, interactive visualization for dynamic point cloud data);
- Solid record of research activities relevant for the post including publications in international peer-reviewed journals.

The candidate is expected to be creative and work independently

HOW TO APPLY

If you are **already on a valid CAST FG IV reserve list**, or you **have already applied to one of the calls below**, you can directly submit your application at <http://recruitment.jrc.ec.europa.eu/?type=AX>.

Interested candidates should provide a CV and cover letter explaining their motivation and aptitude for the vacancy and the described research areas and tasks. In the list of publications accompanying the CV, please highlight your five most relevant publications.

If not, before applying to this position, **you must register** for one of the two following:

- the [Call for Expressions of Interest | EU Careers \(europa.eu\)](http://europa.eu) (CAST Permanent FG IV), which is used by a wide range of organisations (institutions, bodies, offices and agencies of the European Union), or
- the [specialised call for researchers](#) (JRC Call COM/1/2015/GFIV – Research), which is mainly used by the JRC.

Note that each of the calls above has **different minimum eligibility requirements and different selection tests**.

The JRC cultivates a workplace based on respect for other people and the environment, and embraces non-discriminatory practices and equality of opportunity. In case of equal merit, preference will be given to the gender in minority.