The University Gustave Eiffel

The University Gustave Eiffel, created on January 1, 2020 from the merger of the Ifsttar (French Institute of Transport, Planning and Network Sciences and Technologies) and the Université Paris-Est Marne-la-Vallée, is a major player in European research on cities and territories, transport and construction. It is a scientific, cultural and professional public institution (like all French universities) with an experimental status and a national presence, which makes it a unique university in France. It aims to be a major player in the field of transportation and urban research. The research laboratories of the Université Gustave Eiffel conduct both upstream and downstream research and expertise in a wide range of disciplines (mathematics and computer science, electronics, materials, chemistry, civil engineering, geosciences, social sciences, psychology, economics, management, innovation sciences, communication, ethics, history, art, literature, etc.) and in areas with a strong social impact such as transport, infrastructures, natural hazards and cities, to improve the living conditions of our fellow citizens and, in a broader sense, promote the sustainable development of our societies.

https://www.univ-gustave-eiffel.fr/

The host laboratory

The GEOLOC laboratory brings together an international team of dynamic researchers with expertise in positioning and navigation solutions, developing innovative algorithms and devices to improve the mobility of people and vehicles. Localization, which has become widespread thanks to the use of smartphones, offers new opportunities to better support daily mobility adapted to each individual. Our research takes into account the specific needs of location-based applications and services to create algorithms adapted to new forms of mobility, responding to climate change, encouraging the sharing of means of transport, or providing better navigation aids for vulnerable people.

The positioning solutions we are looking for are ubiquitous, accurate, reliable, and secure, to support critical soft mobility applications. They also need to be certified to ensure that they are part of an economic and industrial reality that is having an impact on our society. This research is based on signals and measurements from inertial sensors, magnetometers, GNSS receivers, and cameras, as well as relevant map data. To carry out this research, the laboratory uses original equipment, such as an instrumented vehicle (VERT), connected smart devices (ULISS, PERSY) that replace a smartphone, and a multi-sensor reference solution that models human body movements in 3D. The GEOLOC laboratory is also actively involved in international scientific activities, steering international conferences and standardization groups, organizing indoor positioning competitions, and leading a new open-access scientific journal.

https://geoloc.univ-gustave-eiffel.fr/en/

Permanent Researcher

Location

Campus of Nantess
FRANCE

Discipline (s)

Computer Science
Geomatic Engineering
Signal / Image Processing

Starting date

3rd trimester of 2024

The GEOLOC laboratory is part of the AME ("Aménagement, Mobilité, Environnement") department and deals with the transportation and mobility of people and goods in their interaction with the built environment and the socio-technical systems on which they are based, as well as with the natural environment and the planning of urban and non-urban areas. The department is concerned with mobility, its practices and related policies, as well as the different environments with which it interacts: technical systems (infrastructures, vehicles, facilities, information systems), actor systems and ecosystems. The skills and disciplines mobilized in the AME department are diverse: human and social sciences, engineering sciences, environmental sciences. The department's research activities are based on both quantitative and qualitative approaches. The scientific project of the AME department is structured around three axes: systems of actors (institutions, operators and industries, end users), ecosystems (biodiversity, air, water), technical systems (infrastructures, vehicles, information systems).

Research Position

The focus of this research opportunity is to explore artificial intelligence methods that utilize physical, spatial, and temporal navigation data to support new forms of mobility. The Research Fellow will focus on the intricacies of customizing mobility assistance systems to individual needs, evaluating the performance level of positioning/navigation systems, and assessing digital tracks and signals from wearables. Its central role is to bring the service dimension to the development of pioneering AI-based methods in the field of positioning and navigation aids. This research can be divided into several areas:

- Interpretability of AI models,
- Development of models that are robust to change: environment, hardware, mobility profiles,
- Adaptation of AI models to real-time constraints,
- Automated learning on extended databases,
- Methodology for building optimized databases,
- Participation in the development of data management plans required for AI.

The Research Fellow will join the research team of the GEOLOC laboratory and participate in the supervision of research projects, in collaboration with the other laboratories of the AME department working on mobility and map data. He/She will utilize his/her expertise in dynamic positioning methods to contribute to teaching activities at the University Gustave Eiffel and collaborate with local partners to enhance the educational experience in this domain. The Research Fellow will develop new conceptual and technical expertise in the field of artificial intelligence for positioning and navigation and disseminate this knowledge through scientific animations and presentations within the AME department. He/she will work collaboratively to design and implement data management plans that facilitate the efficient collection and utilization of large datasets required for advanced AI methods.

In addition to his or her research production activity, a Research Fellow is also expected to develop, in the long term, a diversified activity in all or part of the following activities:

- Teaching and research training (teaching, supervision of trainees, doctoral and post-doctoral students, participation in juries and bodies or committees related to teaching)

Application Deadline

1st trimester of 2024

Application Process

Written Application
Oral Presentation

Salary

Based on the "Chargé de Recherche" French national grid and professional experience

Benefit

Flexible Working Hours
Possibility of Teleworking
International Environment
On-site Subsidized Catering
Public Transport Refund
Cultural and Sport Activity

- Research administration and facilitation activities (team facilitation, project coordination, staff management, management of test facilities)
- Valorisation and transfer activities (research and industrial contracts, consultancy and advisory activities, transfer of research results to the socio-economic world, contribution to public policy development, dissemination of scientific culture)
- International activities (participation in European projects, ongoing international collaborations, contributions to the international visibility of the university)
- Scientific outreach (membership of learned societies, editorial boards, scientific committees of institutes, conferences, recruiting committees).

Expected Profile

The candidate must hold a PhD in signal/image processing, applied mathematics or computer science, or be able to prove an equivalent level, in particular for foreign candidates (publications, participation in projects, teaching). For this position, specialization in Artificial Intelligence (or statistical learning methods) and experience in their application to one or more of the following fields are required: Geomatics, Navigation, Mobility.

The candidate's application file should highlight his/her ability to develop the activities (listed above) expected of a research Fellow. Scientific publications at the highest level (international peer-reviewed journals and/or international conferences), participation in research projects (national and/or European), an aptitude for teamwork and scientific leadership, interpersonal skills and oral and written communication skills in French and English will be particularly appreciated. Scientific rigour, as well as autonomy and organisational skills, are obviously expected.

The person recruited will be assigned to the "GEOLOC" Laboratory, within the AME Department, on the university campus in Nantes-Bouguenais.

How to apply?

- The candidate shall email the CV and publications list to the contact persons.

- The candidate should propose in his/her application a scientific research project in line with the activities of the targeted research team. Next step will be to discuss the research project with the Geoloc laboratory.

Contact

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Knowledge

- Data Science / AI
- Signal and image processing
- Statistics
- Navigation, Geomatics
- English: fluent

Skills / Know-how

- Python, matlab
- Scientific supervision
- Scientific writing

Soft skills

- Communication
- Teamwork
- Organization and rigor
- Capacity of proposal

TEAM GEOLOC