
Contract type : Public service fixed-term contract
Level of qualifications required : PhD or equivalent
Fonction : Post-Doctoral Research Visit

About Inria

Inria, the French National Institute for computer science and applied mathematics, promotes “scientific excellence for technology transfer and society”. Graduates from the world’s top universities, Inria’s 2,700 employees rise to the challenges of digital sciences. With its open, agile model, Inria is able to explore original approaches with its partners in industry and academia and provide an efficient response to the multidisciplinary and application challenges of the digital transformation. Inria is the source of many innovations that add value and create jobs.

About the research centre or Inria department

The Inria Sophia Antipolis – Méditerranée center counts 37 research teams and 9 support departments. The center’s staff (about 600 people including 400 Inria employees) is composed of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrators. 1/3 of the staff are civil servants, the others are contractual. The majority of the research teams at the center are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Six teams are based in Montpellier and a team is hosted by the computer science department of the University of Bologna in Italy. The Center is also a member of the University and Institution Community (ComUE) “Université Côte d’Azur (UCA)”.

Context

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Accenture, as a service and consulting company, is bringing innovation to its clients through various forms e.g., co-innovation through workshops, rapid prototyping, piloting or R&D delivery.

Assignment

--- Research Context ---

Robots helping humans in performing their everyday activities are becoming nowadays very popular, given the valuable impact they may bring on society, e.g., robots assisting elderly people in their places to support them in their everyday tasks. However, in order to concretely interact with humans, intelligent systems are required to show some human-like abilities such as the ability to explain their own decisions.

The research question we target for this post-doctoral position is “how to explain and justify machine decisions to humans?”. The domains are Artificial Intelligence, and more specifically Machine Learning, Argumentation (as KRR formalism intended to explain decision making) and Semantics (knowledge graphs).

This post-doctoral position grounds for research context the ALOOF project. In a nutshell, one of the goals of ALOOF is to equip autonomous systems with the ability to learn the meaning of objects, i.e., their perceptual and semantic properties and functionalities, from externalized knowledge sources accessible through the Web. More details may be found here: https://project.inria.fr/alooft/
--- Business Context ---

All journeys of innovation start by understanding our clients, their industry, value, limitations, and impact on the marketplace. Accenture The Dock in Dublin, as the Accenture innovation hub in Europe, has been designed to showcase the best of Accenture innovation and inspire our clients. The number of clients attracted by The Dock and its visits has grown exponentially over the past 12 months. Unfortunately not all client requests to understand innovation in Accenture can be granted due to numerous requests and preparation needed to showcase relevant technologies, projects, innovations and people behind the innovation. Such a limitation is due to the huge manual effort in preparing a client visit and understanding its needs in term of innovation (in its particular industry).

We aim at addressing this problem by developing machine-assisted innovation touring. The machine, interfaced by Softbank Pepper, will be responsible for guiding clients to relevant projects, team, people, prototype, asset by understanding the client industry, its value, limitations, and impact on the marketplace. Data will be collected internally to gather Accenture projects and assets, and externally to consolidate it with the Web of data. The machine will be able to justify its decisions (e.g., showcase of a project, team or asset) through real-time interaction, ensuring a seamless machine to human (client) journey across innovation in Accenture.

Main activities
The objectives of this postdoctoral position are:

- The gathering of bibliographical content to constitute a solid basis for working on the following development.
- The definition of an Information Extraction module to extract information from the raw data provided as input by the Accenture company, and definition of a Semantic module able to construct the knowledge graph based on the output of the Information Extraction module.
- The definition of a Decision Making module, so that given the goal of the client and his own background, a plan is elicited to be executed, i.e., the specific tour in the company building.
- The definition of an explanation module, such that the decision is explained and justified to the clients by means of an argumentation framework grounding on the generated knowledge graph.
- The scientific results obtained during the postdoc will be published in top conferences and journals in Artificial Intelligence.

Skills
The candidate must hold a PhD thesis in Computer Science, with a specialization on the Artificial Intelligence field. He must have strong skills on the field and possibly in some frameworks and languages related to it, knowledge on the Natural Language Processing field might also help. An experience with Machine Learning frameworks is strongly advised. Finally, he must have good English skills in writing and communication.

Benefits package
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours
- Sports facilities

Remuneration
Gross Salary: 2650 brutto per month