Benefits package

Skills

Complementary activities

Main activities

Assignment

Context

2023-06605 - Data engineer (M/F) - Young graduate

Contract type : Fixed-term contract
Renewable contract : Yes
Level of qualifications required : Graduate degree or equivalent
Other valued qualifications : Master's degree or equivalent
Function : Temporary scientific engineer
Corps d'accueil : Ingénieur de Recherche (IR)
Level of experience : Recently graduated

General Information

- Town/city : Paris
- Inria Center : DGD-S
- Starting date : 2023-10-01
- Duration of contract : 2 years
- Deadline to apply : 2023-09-10

Contacts

- Inria Team : DGD-S (DGD-S)
- Recruiter : Rottembourg Benoit / benoit.rottembourg@inria.fr

Benefits package

Subsidized meals
Public transport partially reimbursed
Vacations: 7 weeks' annual leave + 10 days’ RTT (full-time basis) + possibility of exceptional leave (e.g. sick children, moving house)
Possibility of telecommuting (after 6 months' seniority) and flexible working hours
Professional equipment available (videoconferencing, loan of computer equipment, etc.)
Social, cultural and sports benefits (Association de gestion des œuvres sociales

Some works and summaries on online algorithm audit techniques

- The Regalia project: https://www.inria.fr/fr/regulation-algorithms-projet-regalia or https://inseyer.org/projet-regalia-algorithmes-bientot-auscultes/
- Development of bias analysis metrics and sampling techniques
- Development of bias and algorithmic behavior visualization and reporting tools
- Web scraping and API queries on partner sites
- Structuring customer journey and product recommendation/pricing databases
- Contribution to the open-data ecosystem around the public data manipulated
- Maintain a technology watch on recommendation and pricing algorithms in conjunction with the REGALIA team.
- Promotion and documentation of the platform to partners and research teams
- Create a robust and scalable test architecture to facilitate the integration of new customer behaviors, new audit techniques (black or grey box) and new recommendation, pricing and scoring algorithms.
- Support the team’s researchers and PhD students in the development of efficient bias identification and repair algorithms. Frugal sampling techniques are at the heart of the project, and may involve, for example, methods of local or regional interpretability, counterfactual explanation, Bayesian optimization, multi-armed bandits or active learning. Repairing biased algorithms may involve, for example, studying regularization or optimal transport methods.

Skills

- You feel concerned by the issues surrounding the regulation of artificial intelligence algorithms (explainability, fairness, identification of biases).
- You like to understand how algorithms work, their economic model and the effects they have on users.
- You have a keen interest in the backend and in setting up measurement and testing environments.
- You enjoy discovering and assembling data-driven technologies to solve problems.
- You know how to work in a multi-disciplinary team and understand the business needs of your non-technical contacts.

About Inria

Inria is the French national research institute dedicated to digital science and technology. It employs 2,650 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

- Development of methods to identify biases in recommendation, pricing and scoring algorithms.
- Create a robust and scalable test architecture to facilitate the integration of new customer behaviors, new audit techniques (black or grey box) and new recommendation, pricing and scoring algorithms.
- Support the team’s researchers and PhD students in the development of efficient bias identification and repair algorithms. Frugal sampling techniques are at the heart of the project, and may involve, for example, methods of local or regional interpretability, counterfactual explanation, Bayesian optimization, multi-armed bandits or active learning. Repairing biased algorithms may involve, for example, studying regularization or optimal transport methods.

Assignment

The engineer will join Inria’s REGALIA team and will work in close collaboration with the authorities in charge of regulating digital platforms, as well as with the audit structures of the industrial partners. The mission will involve:

- Generate consumer use cases, structure the data and set up a library of techniques for identifying bias or unfairness in processing algorithms.
- Create a robust and scalable test architecture to facilitate the integration of new customer behaviors, new audit techniques (black or grey box) and new recommendation, pricing and scoring algorithms.
- Support the team’s researchers and PhD students in the development of efficient bias identification and repair algorithms. Frugal sampling techniques are at the heart of the project, and may involve, for example, methods of local or regional interpretability, counterfactual explanation, Bayesian optimization, multi-armed bandits or active learning. Repairing biased algorithms may involve, for example, studying regularization or optimal transport methods.

Context

This position involves the development of a platform for regulating the recommendation, pricing and scoring algorithms of digital players. It is part of a drive to increase the skills of government departments and key regulators and auditors in monitoring digital platforms. The aim is to protect competition rights and ensure that consumers receive fair, transparent and non-discriminatory treatment from the online algorithms that influence their choices. This need arises in a context of increasing sophistication of online algorithms, based on increasingly personalized and powerful profiling methods, often based on artificial intelligence. This context has led (European) legislators to create a new framework to regulate these algorithmic practices; these are the DSA and DMA texts and the AI Act text, currently being drafted.

The aim is to produce an environment for testing and supervising the main algorithms for recommending products, content and contacts, and for pricing products and services. This framework should enable us to simulate representative user use cases and identify biases or unfairness in the processing algorithms to be validated. These audit algorithms will use a combination of state-of-the-art techniques in artificial intelligence (machine learning, deep learning, reinforcement learning), statistics and operational research.

Some works and summaries on online algorithm audit techniques

- Some papers and summaries on online algorithmic thinking: https://www.inria.fr/fr/regulation-algorithms-projet-regalia or https://inseyer.org/projet-regalia-algorithmes-bientot-auscultes/
- False consumer opinions (DGCCRF): https://www.oecd.org/fr/...
d’Inria

- Access to professional training
- Social security

**Remuneration**
According to degree and experience

- Identifying bias in Amazon’s Buybox: https://devashraval.github.io/buyBox.pdf

**Warning:** you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.

**Instruction to apply**

**CV and cover letter mandatory**

**Defence Security:**
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorization to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy:**
As part of its diversity policy, all Inria positions are accessible to people with disabilities.