A supervised statistical learning setting (regression model) will be defined since the scalar outcome of interest is expected.

The postdoc will define the mathematical problem from the technical challenges and the flight data. Minimizing the fuel consumption can be mathematically modelled as an optimal control problem, whose solution is expected to be as close as possible to the best real trajectory in reality. This can only be achieved if the mathematical modelling of the problem is performed as accurately as possible, a requirement for this being the precise estimation of the aircraft’s behaviour. This motivates the search for narrow system identification techniques, which are the main topic of this call. Several machine learning methods will be identified and tested for this purpose. New techniques will be proposed in order to have the most accurate tool as possible. Moreover, high-level artificial intelligence techniques will use the machine learning models for the purpose. New techniques will be proposed in order to have the most accurate tool as possible.

Mission confiée

The postdoc holder is expected to start in January 2019 or later. The position is funded for 18 months. The average gross monthly salary is about 2700€. The position comes with health insurance and social benefits, such as subsidised catering service and partially-reimbursed public transport. The project PERF-AI is funded by the European Commission for the period 2018–2020. The postdoc holder will be working within the Modal project-team of the Inria Lille - Nord Europe research center, under the direct supervision of (i) Dr Benjamin Guedj, research scientist at Inria, (ii) Dr. Vincent Vandewalle, assistant Professor at Lille University. Inria is the top French research institute in computer science and mathematics, with a particular focus on machine learning and artificial intelligence. Inria is organized in eight research centers. Further info on Lille: https://www.inria.fr/fr/en/ https://www.inria.fr/en/centre/lille

Lille, France is a beautiful, historic city conveniently located near Paris, Brussels, and London with excellent train and air connections (50 minutes by high-speed train to CDG international airport), and is renowned for its welcoming living environment. Further info on Lille: https://en.wikipedia.org/wiki/Lille Occasional travels to Safety Line’s offices in downtown Paris are expected.

Safety Line is an innovative digital technology company, specialised in data management software solutions for aviation. With a team of highly experienced Safety experts (including former BEA investigators), data scientists and IT specialists, SL aims to bring their capabilities ranging from flight data recorder raw data decoding and processing, big data analytics to perform flight profile optimization (OptiClimb), end to IT solutions for airlines operations. https://www.safety-line.fr

Informations générales

- Thème/Domaine : Optimisation, apprentissage et méthodes statistiques
- Statistiques (Big data) (BAP E)
- Ville : Villeneuve d’Ascq
- Centre Inria : CRI Lille - Nord Europe
- Date de prise de fonction souhaitée : 2019-01-01
- Durée de contrat : 1 an, 6 mois
- Date limite pour postuler : 2018-12-31

Contacts

- Equipe Inria : MODAL
- Recruteur : Guedj Benjamin / benjamin.guedj@inria.fr

A propos de l’Inria

Inria, the national institute of research dedicated to the sciences of the digital, promotes excellence scientific and the transfer for the benefit of all with the greater impact. It employs 2400 personnel. Its 200 teams-agents agile, in general communes with others academics, implement more than 3000 scientific projects to develop the fields of sciences informatiques and mathematical, often at the interface of other disciplines. Inria works with numerous companies and accompanied the creation of plus of 160 start-up. The institute s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

Conditions pour postuler

Full applications will be processed in priority (CV + Cover letter + 2 letters of recommendation). The position is open to all candidates and in line with the policy of diversity. The position is open to disabled candidates.

Sécurité défense

Ce poste est susceptible d’être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L’autorisation d’accès à une zone est délivrée par le chef d’établissement, après avis ministériel favorable, tel que défini dans l’arrêté du 03 juillet 2012, relatif à la PPST Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l’annulation du recrutement.

Politique de recrutement

Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.

Attention : Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d’autres canaux n’est pas garanti.
can be extracted from the data (consumption, aerodynamic forces, etc.). The postdoc will identify relevant state-of-the-art machine learning algorithms. It includes, but not limited to, tree-based ensemble algorithms and Gradient Boosting algorithms, model aggregation, Bayesian and kernel methods. Safety Line will bring an expertise to the flight data and flight mechanics that will support the statistical modelling.

A particular focus will be on the development of an optimization procedure which makes use of the aircraft performance model defined. A reinforcement learning setting with continuous states and actions will be investigated in order to take into account nonparametric performance models. The optimization tools will be adapted to all flight phases (climb, cruise, descent) and a first proof of concept will be implemented.

Compétences
- PhD degree in statistics, machine learning, or related area.
- Working fluency in English. French is also helpful but not required, as international research in the area is typically published and presented in English.
- Ability to take leadership roles on research projects, and also to engage in cooperative teamwork.
- Ability to write research papers and diffuse results in international conferences.
- Good Python programming skills for running experiments with developed algorithms.

Avantages sociaux
- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave

Rémunération
Gross salary 2653 € per month.