Scientist offer:
Position type: Postdoc, duration one year
Functional area: Campus Polytechnique, Palaiseau (91), France
Research theme: Mean Field Games with application to electricity production
Project: Commands team (Inria Saclay)

About Inria and the job:
Established in 1967, Inria is the only public research body fully dedicated to computational sciences.
Combining computer sciences with mathematics, Inria’s 3,500 researchers strive to invent the digital technologies of the future. Educated at leading international universities, they creatively integrate basic research with applied research and dedicate themselves to solving real problems, collaborating with the main players in public and private research in France and abroad and transferring the fruits of their work to innovative companies.
The researchers at Inria published over 4,500 articles in 2013. They are behind over 300 active patents and 120 start-ups. The 172 project teams are distributed in eight research centers located throughout France.
The Commands team is located in the Centre de mathématiques Appliquées, Ecole Polytechnique, and is dedicated to the optimization of dynamical systems, deterministic or stochastic and to the numerical algorithms for solving these problems. See the page https://team.inria.fr/comms/
Le postdoc researcher will work with Pierre Martinon and Frédéric Bonnans.

Mission:
Analysis and development of tools for solving MFG problems, with applications in energy.

Job offer description:
The MFG allow to modelize the way the crowd can influence the personal behavior. This is particularly relevant for the analysis of changes in the economic behavior (as for critical levels for the adoption of new technologies). The models, based on stochastic control, boil down to resolve coupled parabolic equations by finite differences of semilagrangian schemes. The main themes will be
- Analysis of existence of an equilibrium
- Choice of discretisation and numerical analysis (convergence order)
- Choice of optimization algorithms allowing to solve the discrete problem.
An example of such a model is given in [1].

References
[1]
Skills and profile:

Doctor in applied mathematics; knowledge of the numerical analysis of parabolic PDEs and if possible, their interpretation based on stochastic processes. PhD defense not before 2016.

Benefits:

- Canteen and cafeteria;
- Sports equipment;
- Transport reimbursement

Additional information:

Security and Defense procedure:

In the interests of protecting its scientific and technological assets, Inria is a restricted-access establishment. Consequently, it observes special regulations for welcoming foreign visitors from outside of the Schengen area. The final acceptance of each candidate thus depends on applying this security and defense procedure.

Start and duration of the contract: January 2018, one year

Salary: 2 653€ per month

Contact(s): Only by email, send to: Frederic.Bonnans@inria.fr, Pierre.Martinon@inria.fr your Vitae with a motivation letter.