Title:

Markov models

Type : post-doc
Work place : Inria Grenoble
Themes: Applied Mathematics, Statistics, Computer Science.
Project-Team: POLARIS

About Inria

« 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 4,450 articles in 2012. They are behind over 250 active patents and 112 start-ups. The 180 project teams are distributed in eight research centers located throughout France. »

Mission

This post-doc will be financed by ANR project Marmote. The main objective will be to participate to the development of modeling tools and optimization techniques applied to one of the case-study of our project (perfect simulation software, coupling techniques).
One of the key aspect of the project is the use Markov chains to model diverse discrete event dynamic systems ranging from execution time of algorithms, random walks, to more concrete systems such as call centers and communication networks.
The second research objective to to design efficient methods and tools to carry computations efficiently (compute the stationary distribution, the mixing time, or coupling times of a Markov chain).

Description of the scientific objectives

The candidate will contribute to the theoretical foundation of the project and/or to the development of software tools.
On the theoretical side, the main research directions concern coupling times and the complexity of Markov chain simulation.
On the tool side, the design of new Markov simulation programs and the improvement of existing tools (PSI).

Profile of candidates

Applicants must have a PhD in Computer Science, Mathematics or Statistics. A strong knowledge in stochastic modeling and/or optimization is advised. Applicants should be able to work efficiently in a research team.

Duration

   Duration : 12 months, starting anytime from now.

Informations:

Scientific supervisors:

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It is advised to contact Jean-Marc Vincent or Bruno Gaujal for more information on the research project.