Two-year postdoc position in machine learning in Toulouse
Bayesian deep learning

Description of work

Analysis of heterogeneous data can be generally conducted thanks to dedicated inference methods able to account for the very nature of the data itself. Fully analysing these extended datasets requires an unifying framework overcoming crude and marginal descriptions of the single measurements. Setting up such methodological frameworks should ensure both the synthesis and consistency properties of these marginal descriptions while revealing hidden properties brought by jointly analysing the whole set of data. To do so, the measurements can be unfold into a latent space where relevant information can be inferred, whatever the underlying heterogeneity of the acquired data. However, one of the major challenges to be tackled when building this latent space arises when there is no straightforward generative model able to offer a joint and direct description of heterogeneous data. The project aims at proposing a Bayesian framework where statistical inference can be easily conducted without explicitly specifying joint generative models relating the latent and observational spaces.

Topics of interest:

- Generative deep models, variational auto-encoders, generative adversarial networks (GANs)

- Likelihood-free methods, approximate Bayesian computation (ABC)

- Bayesian nonparametrics, Gaussian processes

- approximate & stochastic inference, scalable MCMC

Advisors

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Place of work

The position is part of project **FACTORY** (*New paradigms for latent factor estimation*), funded by the **European Research Council** under a Consolidator Grant (2016-2021) and coordinated by Cédric Févotte (CNRS). FACTORY is hosted by the **Institut de Recherche en Informatique de Toulouse** (IRIT), a joint laboratory of CNRS and Toulouse universities & engineering schools. The physical location for the project is the ENSEEIHT campus, in a lively neighbourhood of the city center.

Candidate profile and application

Prospective applicants should have a PhD in **machine learning**, **computational statistics**, or a related discipline, good programming skills, and good communication skills in English, both written and oral. The monthly net salary is 2400€ for researchers with less than 2 years of professional experience after the PhD, and starts from 3000€ in other cases. The position comes with health insurance & other social benefits.

Applicants are requested to send a CV, a brief statement of research interests and the contact details of two referees in a single PDF file. Applications will be collected until early June 2019 and then on until a suitable candidate is found.