International Symposium in English
29 - 30 June 2022

Probabilistic Programming

CHAIRE SCIENCES DU LOGICIEL | Organization: Xavier LEROY and Jean-Baptiste TRISTAN

Probabilistic Programming
La programmation probabiliste

Probabilistic programming has emerged as a powerful tool for statistical modeling. It draws on the formal semantics, compilers, and other tools from programming languages to build efficient inference evaluators for models and applications from machine learning using the inference algorithms and theory from statistics. This colloquium will bring together researchers in programming languages, statistics, and machine learning to discuss recent developments and applications of probabilistic programming.

La programmation probabiliste fournit de puissants outils pour la modélisation statistique. Elle s'appuie sur la sémantique formelle, les compilateurs, et autres outils en provenance des langages de programmation pour construire des évaluateurs efficaces pour les modèles et les applications en apprentissage statistique, utilisant les théories et les algorithmes d'inférence provenant des statistiques. Ce colloque croisera les points de vue de chercheurs en langages de programmation, en statistiques, et en apprentissage sur les progrès récents et les applications de la programmation probabiliste.

Illustration: Galton board (planche de Galton) © Les sorciers de salem

PROGRAM

Amphithéâtre Guillaume Budé
Les cours, séminaires, tables rondes et conférences sont gratuits, en accès libre, sans inscription préalable.

29th June 2022

9:00 Xavier Leroy (Collège de France) and Jean-Baptiste Tristan (Boston College)
Introduction and Welcome

9:15 Andrew D. Gordon (Microsoft Research),
Why Statistical Thinking is Transforming Programming Language Research

10:00 *Break*

10:30 Gilles Barthes (Max Planck Institute for Security and Privacy)
Relational proofs of probabilistic programs and applications to cryptography

11:15 Nicolas Chopin (ENSAE)
Probabilistic Programming for Sequential Monte Carlo?

12:00 *Lunch Break*

14:00 Joseph Tassarotti (Boston College)
Formally Verified Compilation of Probabilistic Programs

14:45 Maria Gorinova (Twitter)
Program Analysis of Probabilistic Programs

15:30 *Break*

16:00 Atılım Güneş Baydin (Oxford University)
Probabilistic and Differentiable Programming in Scientific Simulators

16:45 Xavier Rival (Inria)
Towards Verified Stochastic Variational Inference for Probabilistic Programs

17:30 *Break*

18:00 Andrew Gelman (Columbia University)
Social science: From prediction to modeling to understanding

19:00 *End*

30st June 2022

9:15 Vikash K. Mansinghka (MIT)
On an alternate route to scaling AI via probabilistic programs

10:00 *Break*

10:30 Christine Tasson (Sorbonne University)
Denotational verification of Probabilistic Programming

11:15 Jan-Willem van de Meent (University of Amsterdam)
Thinking Compositionally about Inference

12:00 *Lunch Break*

14:00 Francis Bach (Inria)
Formal guarantees in machine learning, statistics and optimization

14:45 Guillaume Baudart (Inria)
Reactive Probabilistic Programming

15:30 *End*

COLLÈGE DE FRANCE 1530 | Année académique 2021/2022

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