Opening remarks

Dmitry Vetrov

Research professor at HSE

Lab leader at Samsung AI Center

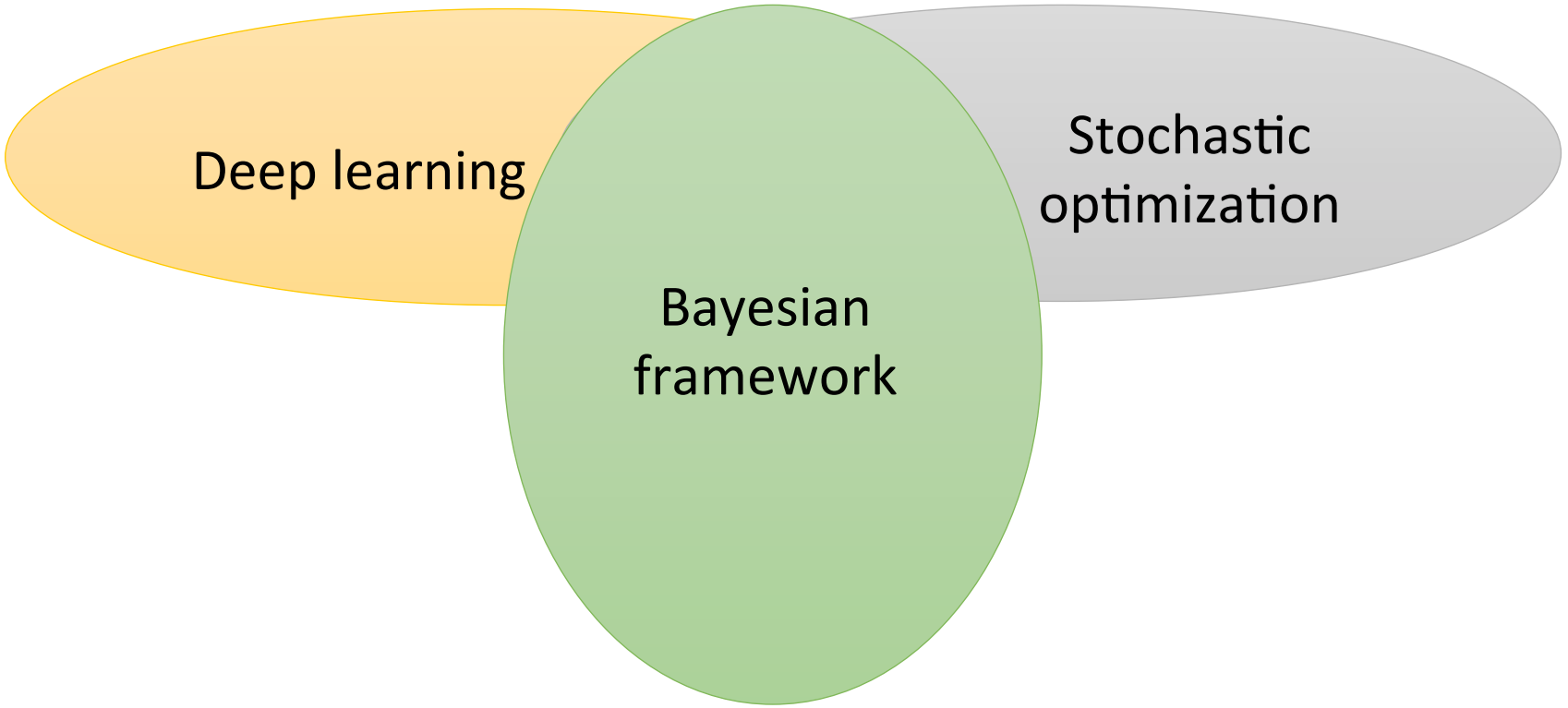
Head of Bayesian methods research group

http://bayesgroup.ru

Selection

- 272 applications
- 108 candidates from 25 countries were selected
- Each application was reviewed by two reviewers
- Many strong applications were rejected ☹

Topic of the school



The charm of Bayes

of Savage and de Finetti, have advanced powerful theoretical reasons for preferring Bayesian inference. A byproduct of this work is a disturbing catalogue of inconsistencies in the frequentist point of view.

Nevertheless, everyone is not a Bayesian. The current era is the first century in which statistics has been widely used for scientific reporting, and in fact, 20th-century statistics is mainly non-Bayesian. [Lindley (1975) predicts a change for the 21st!] What has happened?

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earlier

2. TWO POWERFUL

The first and most obvious fac
of two powerful competitors: Fisl
Kiefer called the Neyman–Pears

Bridging the gaps….

Bayesian framework establishes unified formalism and methodology for a variety of different ML problems

- Learning representations (lecture 5)
- Reinforcement learning (lecture 8, 9)
- Regularization (lecture 1, 16)
- Generative models (lecture 5, 6)
- Gaussian processes (lecture 12, 13)

Many existing DL algorithms now get Bayesian interpretation that extends their abilities

- Dropout (lecture 16, 17)
- Generative adversarial networks (lecture 10)
- Auto-encoders (lecture 5)

Mathematical tools

The key ingredient are tools that provide scalability

- Stochastic optimization (lecture 3)
- Variance reduction (lecture 6, 11)
- Doubly stochastic variational inference (lecture 5)
- Scalable MCMC algorithms (lecture 15)

Invited speakers

Dr. Max Welling
(University of Amsterdam)

Dr. Maurizzio Filippone
(EURECOM)

Sergey Bartunov
(DeepMind)

Alessandro Achille
(University of California)
by skype

Michael Figurnov
(DeepMind)

Goals

- To establish Bayesian background
- To gain ability to read and understand recent (and future) papers on deep Bayesian models
- To get some experience in using deep probabilistic models
- To understand the spirit of scalability
- To socialize ;-)

General partner