# Bayesian multimodeling

MIPT

# About the course

- The focus is on the models, especially on the complex compositions of the models
  - Model criteria
  - Model complexity
  - Model search space
  - What is model optimaliy? Suboptimality?
  - How to optimize hyperparamaters and metaparameters? What's the difference?

# Topics in this term

- Distributions, expectation, likelihood
- Bayesian inference
- MDL
- Belief propagation, networks, and hierarchical models
- Model ensembles, Mixture of experts
- Bayesian agents, multi-agents and reinforcement
- Probabilistic metric spaces
- Variational inference
- Informative prior, Sampling, importance, Metropolis-Hastings
- Random processes and genetics for model generation

# Scores for the course

$$\text{Score} = min(10, round(2 + \text{Forms} + \text{Talks} * 4 + \text{Labs} * 4))$$

Page course: https://github.com/intsystems/BMM

# Labs

Criteria:

- Correct (no problems with math)
- Visibility and interpretibility
- Code style
- Quality of results

The labs will be done in JAX, read the manuals!

# Talk

- Timing: 5-10 minutes
- Structure:
  - Title
  - Task/model motivation
  - Formal problem statement
  - Theory and method description
  - Experiments, examples, applications
  - Literature
  - Two simple questions (will be inserted into the form)
- For poorly done talks the score is zero.

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TG: see page :)