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
- Probabilistic metric spaces
- Generative and discriminative models
- Data generation, VAE, GAN
- Probabilistic graphical models
- Variational inference
- Hyperparameter optimization
- Meta-optimization

Scores

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

- Every class **at least** one student must give a 15-min talk.
- Scores for talks are normalized wrt ideal case, when **each class has 2 students talks**.
- (No talk at class: -1 for all the students)

No credits for students who didn't give at least one talk and at least one task.

Tasks

Criteria:

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

The tasks must be done in JAX, read the manuals!

Talk

- Timing: 5-15 min
- Structure similar to the student defence talk:
  - Title
  - Motivation
  - Problem statement
  - Theory/method description
  - Experiments, applications
  - References
- For poorly done talks the score is zero

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Page: https://github.com/intsystems/BMM
TG: see page :)