

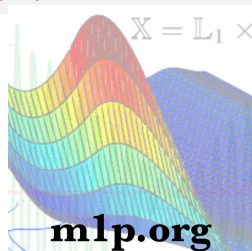
My first scientific paper in Machine Learning

Vadim Strizhov

m1p.org

2024

This course produces students' research papers



Machine learning projects to

- ▶ state the problem
- ▶ run the computational experiment
- ▶ share and deploy results

Science requires community

- ▶ **The student** is a project driver, plunges into scientific research
- ▶ **The consultant** conducts research and helps the student
- ▶ **The professor** states the problem and enlightens the goal

History

- ▶ It starts in February, ends in May, and goes 14 weeks
- ▶ For the past ten years, 500+ projects have been made
- ▶ Awarded in 2020 for its significant impact on the scientific community development

Step-by step weekly instructions and support

Lectures

- ▶ **Theory:** Machine learning for researchers
- ▶ **Practice:** The routine of scientific research

Seminars

- ▶ Collective games
- ▶ Analysis of projects
- ▶ Talks

We read aloud each paper to prepare it for publication

Four talks to convey your message to the audience

Week 3 Introductory pitch

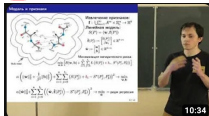
6 The message

9 Computational experiment

12 Conference talk



YouTube channel: Machine Learning



Mikhail Karasikov: Prediction of protein tertiary structure

214 views • 6 years ago



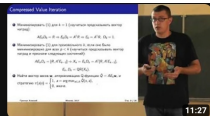
Andrey Kulunchakov: Ranking functions for information retrieval problems

125 views • 6 years ago



Andrey Ignatov: Improving the quality of digital images

51 views • 6 years ago



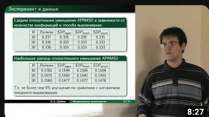
Alexey Grinchuk: Feature space in the problem of reinforcement learning

528 views • 6 years ago



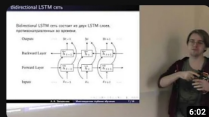
Alexander Aduenko: Selecting multimodels in classification problems

943 views • 6 years ago



Innokenty Shibaev: Convex relaxations in the multiple alignment problem

111 views • 6 years ago



Anton Zakharenkov: Classification of ligand-protein interactions

198 views • 6 years ago



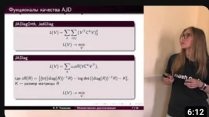
Maria Selezneva: Aggregation of heterogeneous text collections

108 views • 6 years ago



Anton Smerdov: Choosing the optimal recurrent network model

132 views • 6 years ago



Karina Usmanova: Multiple diagonalization for three-dimensional structures

156 views • 6 years ago



Alexey Sholokhov: Noise immunity of ECG signal analysis methods

104 views • 6 years ago



Roadmap

1. Set the toolbox
2. Select your project
3. Read papers
4. Write introduction
5. State the problem
6. Set your experiment
7. Develop your theory
8. Make error analysis
9. Paper draft
10. Share your results
11. Finalize your paper
12. Present your talk



Deliveries are scheduled

- ▶ [LinkReview](#) with references and the literature review
- ▶ [GitHub](#) with the code and computational experiment
- ▶ [Paper](#) is ready for submission
- ▶ [Slides](#) for the presentation
- ▶ [Video](#) of the conference talk



Table of deliveries and weekly scores

Author	Problem	Links	Supervisor	Scores
Pilkevich Anton	Existence conditions for hidden feedback loops in recommender systems	GitHub , LinkReview , Paper , Slides , Video , Video	Khritankov	AIL[B]P-X+RB-H1CV[O]T-EM.H1WJSF
Orlov Alexey	Model distillation on multi-domained datasets	GitHub , LinkReview , Paper	Grabovoi	AIL[B]PXRBCV[O][M]
Gorbulev Alexey	Iterative improvement of the topic model with user feedback	GitHub , LinkReview , Paper , Slides , Code	Alekseev	AIL[B]PX>RBCV>[O]T>[M]

News

- ▶ Every your project is welcome!
- ▶ Your experts and consultants are highly appreciated!
- ▶ The number of students is not limited.

Challenges

- ▶ Every student should work with the society!
- ▶ The project should be welcome to disseminate.
- ▶ The peer-review must be continuous.

A student's paper example

Figure 1: Results for the Graph with F526 tree model

Table 1: Optimal parameters

Parameter	Optimal value
α	0.0000
β	0.0000
γ	0.0000
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Timing

- Student: 48+ hours — day weekly
- Consultant: one hour a week
- Professor: 30' to set, 30' to harvest

Profit

- Student publishes a paper, gets the proof of qualification
- Consultant gains mentorship
- Professor expands the team

The project topics

Any topic is welcome on the open access basis!

- ▶ Analysis of wearable devices' data
- ▶ Brain computer interface modelling
- ▶ Image and symbol recognition
- ▶ Synchrotron image analysis
- ▶ CERN LHCb data analysis
- ▶ Receptor-ligand docking
- ▶ Chemical reaction forecasting
- ▶ Multiscale time series forecasting
- ▶ Expert learning and knowledge distillation
- ▶ Neural architecture search
- ▶ Hyper-networks for model selection
- ▶ Model generation, processes
- ▶ Stochastic model selection
- ▶ Metaparameter optimisation
- ▶ Stochastic optimisation
- ▶ Spatial and time series alignment

Get info and ask your questions

Info



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YouTube



Machine Learning

Telegram



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Vadim Strizhov: mail to vadim@m1p.org
My first scientific paper