

Questionnaire on

Subject of Examination (legible if possible ;))

Mathematical Intro to ML (part of MSPC)

Oral

Written

Oral Reexamination

Date: 5/2021

Duration: 45 min

Examiner: Igor, Renato

Programme of Study: ET Master

Preparation

- a) Continuous attendance at lectures? Yes No
- b) Effects of a): Positive None Negative
- c) Amount of time spent on preparation: 1.5 weeks by yourself group work
- d) Prior knowledge from other lectures/practical experiences?
Probability theory nice to have
- e) What resources did you use? (literature, websites etc.)
ISIS course including videos of MIT ...
- f) Can you give any advice on the preparation of this exam?
understand concepts

Exam

- a) Had there been any agreements on form or contents of the exam? Were they met?
- no
- b) Advice on behaviour during the exam:
explain thoughtfully and shift the exam to your topics by this
- c) Examination style: (atmosphere, questions: clear or unclear, in depth knowledge or general questions, specific interposed questions, specific questions in case of knowledge gaps, ...?)
helps if you have problems. connects various topics
you can select your topic in the beginning for the start.

Other questions

- a) How were you graded? (optional of course) 1.7
- b) Do you think this grade is appropriate? Yes No (why not?) hoped for better
- c) Would you recommend this exam? Yes (to whom especially?) No (why not?)
second part MSPC really interesting. This also for understanding ML
- d) Do you have any other advice or remarks about this exam?

Contents of the Exam: Please try to reproduce as many questions as possible. At which points did the examiner ask for derivations, at which for analytic proof? (If the space here is not sufficient do not hesitate to add additional sheets. But please staple the pages and number them.)

what is PAC learning + def.

what happens with sample complexity if $|Z| \rightarrow \infty$

agnostic PAC learning.

what is 0-1 Loss

empirical Loss

true Loss

How are L_S & L_D connected

How it works Linear Programming

ϵ -representative samples

Uniform convergence

connection UC \rightarrow agnostic PAC learning.

Rademacher Complexity

\hookrightarrow connection to UC

polynomial discrimination

\hookrightarrow connection to $R(\mathcal{F})$

VC Dimension

\hookrightarrow connection to polynomial discrimination

What is CLLB learning

that needs to be convex / bounded