

stats300b: Theory of Statistics II

John Duchi

Winter Quarter 2021

- ▶ what's in the class
- ▶ why it's fun and useful
- ▶ logistics for this quarter

What is this course about

- ▶ convergence of random variables, vectors, and functions
- ▶ notions of optimality and quality of estimators

What you need to be happy

- ▶ stats300a is probably a good idea (not strictly necessary)
- ▶ probability theory at the level of 310a
- ▶ analysis at the level of Math171

The three parts of the course

I finite dimensional problems and models

II optimality and comparisons

III infinite dimensional and uniform problems

Why this course will be fun

- ▶ beautiful theory, you'll be able to read and understand much of the Annals of Statistics
- ▶ we'll understand why different estimators might work and how to think about convergence
- ▶ you'll work like a dog but you'll like it

Some logistics

- ▶ Course staff
- ▶ The “etudes” and grading policy
- ▶ Course videos
- ▶ office hours and piazza

Course Staff

- ▶ instructor: John Duchi
- ▶ TAs: Maxime Cauchois (Stats PhD) and Kevin Guo (Stats PhD)
- ▶ email: `stats300b-win2021-staff@lists.stanford.edu`

Grading policy and études

étude (noun): a short musical composition, typically for one instrument, designed as an exercise to improve the technique or demonstrate the skill of the player.

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- ▶ weekly homeworks, each entire problem graded on a scale of $\{0, 1, 2\}$, 50% of the grade
- ▶ these can be done in groups, etc.
- ▶ weekly *étude problems*
 - ▶ a single problem, to be done *alone* (no collaborators—these are not duets), but open internet
 - ▶ we are unlikely to help you with these
 - ▶ due 24 hours before the homework assignment
 - ▶ you have 24 hours to grade your own assignment and get 50% credit back
 - ▶ we will omit the lowest scoring of your études

Course videos

- ▶ course videos accessible via Canvas website
- ▶ pre-record roughly 30 minute lectures to be watched asynchronously, incorporate the slides to be posted on webpage
- ▶ live sessions will be focused on solving problems and working through examples
 - ▶ I will try, but do not guarantee, that I will upload notes from the live sessions

Office hours and Ed

- ▶ the TAs and I will hold virtual office-hours (times TBD)
- ▶ will use them to answer questions about whatever you like
- ▶ ed available for the class (link on the course webpage)