Q&A Session Week 12 – SUBJECT IN REVIEW

COMP90051 Statistical Machine Learning

Sem2 2020

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This session

- Practice exam review / Exam info
- Subject review (time permitting)

- Thankyou for coming*!!* Students expected to attend if Internet/commitments permit
- Session is **recorded** for posting to Canvas
- Etiquette
  - Write in chat/raise hand anytime
  - **Stay muted** unless speaking

Demo the practice exam; Discuss the exam

Exam tips

- Don’t panic!
- Attempt all questions
  - Do your best guess whenever you don’t know the answer
- Finish easy questions first (do q’s in any order)
- If you can’t answer part of the question, skip over this and do the rest of the question
  - you can still get marks for later parts of the question
  - we don’t repeatedly penalise for carrying errors forward
- Answers in point form are fine

Online exam format

- The exam will not be invigilated, but you are required to work on your own
- Framed as a Canvas LMS ~~quiz~~ assignment
- Given 180mins to complete, plus up to 30 minutes at end for uploading answers (it being long, includes reading)
- Practice exam available as LMS ~~quiz~~ assignment, please use this to familiarise yourself with the interface
  - unmarked, but please do submit so we can double check the system works as intended

"Open book" format

- What you can and can't use:
  - can = lecture materials, reading, workshops, your project reports, previous exams, electronic calculators
  - can't = web resources, web search, electronic messaging, collaboration with others
- But… set similar like prior years'
  - there's not a lot of time to be reading through materials
  - don't memorise the mathematical formulae (use 2019 exam formula page on Canvas, or write own)
  - few definitional questions, more conceptual & worked problems

Question NOT to expect

- **Not**: definitional questions
  - State the X (e.g., training objective for linear regression, chain rule of probability, etc.)
  - Only two questions of this kind in 2019:
    1d) Write an expression relating expected squared loss, bias, and variance
    6a) Write down the gradient descent algorithm …
  - Some of the short-answer questions for the practice
- **Yes**: conceptual questions
  (see rest of 2019 exam, and practice exam examples)

Answering the questions

- Answer the questions using typed text, hand-written answers, or a mix; for hand-written components:
  - use a pen and paper, or a tablet/stylus
  - use lined or unlined plain paper
  - write the question number / sub-question (a/b/c)
  - **new page for top-level question** but not need for new pages for sub-questions (a/b/c)
- Upload a single doc or PDF document to Canvas.
- **Only if you cannot upload** email Ben/Qiuhong/Neil on time at comp90051-2020s2-staff@lists.unimelb.edu.au

What's non-examinable?

- Green slides
- This deck (well, it's just a review)
- Material covered in the reading, for deeper understanding of the lecture materials

- All that said, we won't put large weight on material given little "air time" → prioritise revision

Changes from previous years

- Last year's exam questions are representative of what you will get at the exam
  - Make sure you understand the solutions!
- In 2017
  - active learning; semi-supervised learning
  + independence semantics in PGMs, HMM details
  + deeper coverage of kernels & basis functions, optimisation, regularisation
- In 2018
  - Manifold learning, spectral clustering, Isomap
  - HMM detail (not dropped, made green)
  + Multi-armed bandits

Parts B+C → B
D → C

- 2020sem1 vs 2019, removed multi-armed bandits topic
- 2020sem2 vs sem1 and 2019:
  - PCA, NNet basics (perceptron), Kernelisation in general, Ensembles (forests, boosting, stacking),
  + Bandits reinstated from 2019
  + Added: PAC, VC, Experts, expanded DNNs, HMM

Resources for exam prep

- Practice exam – for format/technology
- Past exams in library – calibrate for difficulty
- Weekly quizzes (many haven't yet attempted)
- Workshops, lectures, readings
- Piazza to clarify concepts

Good luck, you'll do great!

Poll: Which major topics need quick review?

Discuss a subject topic
(time permitting)