Deep Learning and Applications, II

Logistics

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MFE 230ZB
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9/2/2021

Course goals and topics

Goal: “A self-directed introduction to deep learning models for finance applications.”

Some major themes are, within finance and time-series:

- Completion problems;
- Outlier detection;
- NLP;
- RL.

Other topics, as suggested by student groups, are possible.

Course Approach

- Students form groups of **5**. Due to scheduling constraints, and a high enrollment, smaller groups are not possible.
- Each group is responsible for developing a project, an in-depth study that involves numerical experiments on real data, for example comparing two approaches to sentiment classification.
- Deliverables: three 15 min **presentations** and a report.
  - *9/2/2021:* You must have formed your group and chosen your project by then.
  - *9/9/2021:* Introduce the paper, why you chose it, and describe your project.
  - *9/17/2021:* Updates on project, describe the challenges you encounter, and next steps.
  - *9/24/2021:* final presentation, presenting the results of your study, recommendations for further explorations.
- The **report** should be concise and contain an introduction to the paper, main findings, critical review of the paper, and a numerical experiment, with comments on the results.
- Each group is welcome to propose a specific project; the teaching staff will suggest a few choices.

Example: NLP for finance

- *Paper:* "FinBERT: pre-trained model on SEC filings for financial natural language tasks", at https://www.researchgate.net/publication/334974348_FinBERT_pre-trained_model_on_SEC_filings_for_financial_natural_language_tasks
- *Project:* based on the above paper, evaluate the model on a real data set; using FinBERT for sentiment analysis, maybe on earnings calls data if possible; compare to a baseline such as Naive Bayes.

Deliverables

- The **three 15-min presentation**s, in powerpoint format, each to be submitted by the end of day of the presentation, in order to allow teams to incorporate minor changes in response to questions or suggestions from the instructor.
- A **final report** (10 pages max) is due Tuesday 10/1/2021, 8pm PST.

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- *Instructor:* Laurent El Ghaoui (elghaoui@berkeley.edu).
- *TA:* Vinicio de Sola (vinicio.desola@gmail.com)
- *Groups:* Put down the names on the Google sheet: https://docs.google.com/spreadsheets/d/1ABDlQdLsATzhyY81drfWD-UYtut70l1XofiYf1ULGIo/edit?usp=sharing.
- *Discussion sections:* See the calendar.
- *Homeworks:* None. Instead, each group will be responsible for developing three presentations and a report.
- *Grading:*
  1. Choosing a paper that is relevant to deep learning in finance (10% of the total grade).
  2. Critically evaluate the paper, choosing relevant experiments (30%).
  3. Presenting the results (20%).
  4. Writing a final report (20%)
  5. Deliver code in Python (20%).

How do we communicate?

- Preferred way: Slack.
- Email to me. Always cc Vinicio!