AM207: Paper Tutorial

Due Date: Friday, April 27th, 2018 at 11:59pm

Instructions:

- Upload your iPython notebook containing all work to Canvas.
- Structure your notebook and your work to maximize readability.

Tutorial on a Recent Research Development

As part of the requirements for this course we've stated the following (quoting the website): "*There will be one paper, towards the end of this course. It will require reading and presenting a recent research development in the field.*"

We've compiled a list of papers that contain interesting treatments of topics related to AM207:

https://docs.google.com/document/d/1N0FjmMHfpX8P__TAzWLQYXqtj_Hbgo839Gu3B0oKOaM/edit?usp=sharing

If you find a paper not on this list that you would like to delve into for your project, please let us know (and we can add it). If this is a pper from your primary field of work, that is super as well. Please point us to it

We want you to create a tutorial style jupyter notebook summarizing the relevant math, methods and procedure in the paper of your choice and then showing the relevant methods in action by implementing them (on appropriately chosen data).

Choosing a group and a topic

We want you to work in groups of 3 or 4 (preferably 4). We will allow people to work individually or in groups of 2 only in exceptional cases (e.g. you plan on working on a project/paper related to your proprietary research). Form your group and send us 3 papers from the list we provided (or that you decided) in order of preference. We'll formalize the groups, assign you a paper and assign you a member of the AM207 teaching staff to supervise your investigation. Multiple groups may work on the same paper, at our discretion.

Create a tutorial style Jupyter notebook

After receiving your assigned paper, your group should read and internalize the paper and create a tutorial sytle jupyter notebook introducing someone who has graduated AM207 (but not necessarily an expert in the paper topics) to chosen relevant methods and procedures from the paper. We expect your tutorial will include:

- Background information relevant to the paper
- A detailed summary of the relevant methods, math and procedure
- A python implementation of selected important methods from the paper (It is perfectly fine to find methods and code elsewhere on the web, as long as you internalize, understand, implement, and explain what is going on)
- A demonstration of the results of those methods on
  - at-least one dataset (from the paper if available)
  - if the paper does not provide a dataset, use a simulated dataset chosen by your group
  - you may choose to use do both of the above anyways; simulated datasets are the best way to understand the main thrust as well as the edge cases of an algorithm.
- An analysis contrasting your results reimplemented from the paper with a standard method from AM207 or your area of expertise (e.g. mcmc vs special snowflake mcmc)

Milestones

1. If you are not finding a group by this **Friday March 30th**, let us know by the end of Friday! Use the form https://goo.gl/forms/1vrRCTtHwmyPrStc2 to inform us; by doing this you can let us know the papers you are interested in, and we can act as matchmakers.
2. Choose a group, and 3 papers by **Tuesday April 3rd**. Use the form https://goo.gl/forms/1vrRCTtHwmyPrStc2 submit this information to (if you have already emailed us/posted on a piazza private message, there is no need to do this). Only 1 form is needed per group.
3. Choose which aspect/algorithm in the papers you wish to "teach" us by **Tuesday April 10th**, so that you can start implementing. If you are having trouble, please contact your assigned TF.
4. The paper is due on **Friday, April 27th, 2018 at 11:59pm**.