

Final Project: PY580

The final project is your chance to really dig into the ideas and techniques we discussed in class. The project is for you – not me, so please make the best of it. You have the freedom to do pretty much anything you want. However, there are a few parameters that I have found work best:

Overview:

- Please work in teams of 2-3 people that meet weekly. If for some reason you really want to work alone (say on data that is only relevant to you), please talk to me immediately and get explicit permission. However, I would like to really to encourage you to work in a team.
- I expect each person to spend 20-40 hours total working on the project. You can of course spend more.
- You will submit two reports. I would like a 1-2 page "project proposal" and a final project lab report. The format is flexible but it should document the work you have been doing (both successes and failures). You can view it as a sort of lab notebook.
- Additionally, I would like each project to have its own github repo where you also post the lab reports. I have found this to be extremely useful in the future.
- The project is due the first day of finals.

Project Ideas:

You are free to work on anything you like. The freedom is deliberate. Here, I include some basic types of project that have worked well in the past:

- Analyze a dataset from your own work using an ML technique.
- Take one of the ML techniques/papers discussed in class, and reimplement it.
- Do one of the projects from the HuggingFace Courses.
- Fine tune a foundational model for another dataset (can be a classification model or a generative model).
- Integrate a neural network-based variational ansatz into a physics problem you are working on.

Again, you are welcome to do whatever you want. Please use your judgement. If you are not sure about something, just ask. I will try to do my best to help you do the project you are interested in doing.